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NEW WORLD TANAOSTIGMATIDAE
(HYMENOPTERA, CHALCIDOIDEA)

by
John LaSalle

Department of Entomology
University of California
Riverside, California 92521

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JOHN LaSALLE

ABSTRACT. This revision of New World Tanaostigmatidae recognizes 5 genera: *Tanaostigmodes* Ashmead (45 species, 34 of which are new); *Minapis* Brèthes (1 species); *Tanaostigma* Howard (11 species, 6 of which are new); *Tanaoneura* Howard (11 species, 8 of which are new); *Microprobolos*, gen. n. (1 species, which is new). Twenty species groups are erected in the genus *Tanaostigmodes*. Keys are presented to all genera, species groups and species. Five species and two genera are not treated as material was unavailable for study. 1 specific synonymy, 5 generic synonymies, and 12 new combinations are proposed; lectotypes are designated for 10 species.

INTRODUCTION. The Tanaostigmatidae is a small to moderate sized family of Chalcidoidea, related to the Encyrtidae and Eupelmidae. They are unusual in that most members are phytophagous rather than parasitic. There has never been a revision of the New World members of this family. Ashmead (1904) provided a key to the four genera which he placed in his tribe Tanaostigmini: *Tanaostigma*, *Tanaostigmodes*, *Trichencyrtus* [= *Tanaostigma*], and *Eutrichosoma* [a pteromalid]. Crawford (1911) provided a key to the four species of tanaostigmatids then known to occur in the United States. Outside of these two works, there have only been descriptions of single or a few species.

The present work attempts to update our knowledge of Tanaostigmatidae, and provide a classification which will enable future research in this family. Despite the relatively large number of new species described in this work (49), it is felt that the majority of species are still unknown, and the classification proposed should thus be considered tentative. An attempt has been made to define taxa on the basis of synapomorphic character states, however in a few instances, which are noted in the text, this has not been accomplished.

Information concerning types, biology, and distribution are given under the individual species. Complete label data are given in the Material Examined section for each species, however erroneous hosts and doubtful records are not listed in the Biology and Host Records section. Normal

infraspecific variation has been included in the descriptions or redescrptions of each species. Geographical variation, or variation that was not clearly understood (*i.e.* I was not sure whether the variation represented normal infraspecific variation, or whether it was of specific value) is treated separately. Due to the small number of specimens available for most taxa, systematic and nomenclatural decisions tend to be conservative.

Appendices list new synonymies, new combinations, lectotype designations, new taxa, genera described as Tanaostigmatidae which belong in other families, a checklist of Old World Tanaostigmatidae, and host associations of New World Tanaostigmatidae.

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ABBREVIATIONS USED FOR MUSEUMS AND COLLECTIONS.

AEI	American Entomological Institute, Gainesville, Florida, USA
AMNH	American Museum of Natural History, New York, New York, USA
ANIC	Australian National Insect Collection, CSIRO, Canberra, ACT, Australia
BMNH	British Museum (Natural History), London, England
CAS	California Academy of Sciences, San Francisco, California, USA
CDAS	California Department of Food and Agriculture, Sacramento, California, USA
CNC	Canadian National Collection, Ottawa, Ontario, Canada
FSCA	Florida State Collection of Arthropods, Florida State Department of Agriculture and Consumer Services, Gainesville, Florida, USA
IML	Fundación e Instituto Miguel Lillo, Universidad Nacional de Tucumán, San Miguel de Tucumán, Argentina
IOC	Instituto Oswaldo Cruz, Rio de Janeiro, Brazil
LAS	Personal collection of author

MBR	Museo Argentina de Ciencias Naturales "Bernardino Rivadavia," Buenos Aires, Argentina
MCZ	Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts, USA
MLP	Facultad de Ciencias Naturales y Museo, Universidad Nacional de La Plata, La Plata, Argentina
NCSR	North Carolina State University, Raleigh, North Carolina, USA
NHMV	Naturhistorisches Museum, Vienna, Austria
PPRI	Plant Protection Research Institute, Pretoria, South Africa
QMB	Queensland Museum, Brisbane, Queensland, Australia
SMEK	Snow Museum of Entomology, University of Kansas, Lawrence, Kansas, USA
SWRS	Southwest Research Station (AMNH), Portal, Arizona, USA
TAMU	Texas A&M University, College Station, Texas, USA
UAT	University of Arizona, Tucson, Arizona, USA
UCB	University of California, Berkeley, California, USA
UCD	University of California, Davis, California, USA
UCR	University of California, Riverside, California, USA
USNM	United States Museum of Natural History, Smithsonian Institution, Washington, D.C., USA
ZIL	Zoological Institute, Academy of Sciences, Leningrad, USSR
ZMHB	Zoologisches Museum, Humboldt Universität, East Berlin, Germany

MORPHOLOGY. Morphological terms used are shown in Figs. 1-10. Terminology is taken from Graham (1969), with the following changes:

Mesosoma = combined thorax and propodeum

Metasoma = petiole and gaster

Prepectus = postspiracular sclerite of Graham.

The following terms may need additional clarification.

Basal cell. The area of the forewing beneath the submarginal vein extending from the wing base to the speculum (fig.8). Setal counts for the basal cell include only setae on the dorsal surface of the wing, and do not include setae which are part of the subcubital vein.

Dorsal projection. A short projection sometimes present on the dorsal surface of funicular segments of the male antenna (fig.7). This projection usually extends the entire length of the segment. The height of these projections is given as width to keep terminology consistent with that in female and male antennae without dorsal projections.

Face. The area of the anterior part of the head ventral to the toruli (fig.4).

Frons. The area of the anterior part of the head between the toruli and median ocellus (fig.4).

Humeral plate. The basal plate of the forewing which is situated just distal to the tegula (figs.1-2).

Interantennal projection. A slight to prominent raised area between the toruli, which extends into the scrobal impression (fig.4).

Knee. This term describes the area around the connection of the femur and the tibia, including the extreme distal portion of the femur and the extreme basal portion of the tibia. It is used solely as a term of convenience for describing color patterns.

Lateral glabrate area on scutellum. An area on the scutellum which is glabrate and free of the normal sculpture for the sclerite (fig.96).

Marginal fringe. The outer fringe of setae on the margin of the wing (fig.8). In the forewing this fringe (when present) always starts just distal to the frenal fold and may extend from only a short distance to completely around the apex of the wing to the postmarginal vein.

Medial incision of metasomal tergum. A medial incision of the posterior margin of a metasomal tergum (fig.10).

Medial line on metasomal tergum. A medial longitudinal line on a metasomal tergum (fig.10). This line may take the form of a small raised line, an infolding of the metasoma, or a sharp raised crease, and can vary within a species depending on how the specimen dries.

Mesopleural suture. A small suture usually present in the anterodorsal portion of the mesopleuron (fig.2) (cf. sternopleural suture).

Ocellar ratios. The positioning of the ocelli can be of value in separating species, and this is given using the ratio OOL/LOL, the distance between the lateral ocellus and the eye margin divided by the distance between the lateral ocellus and the median ocellus (fig.3).

Rami (R1-R5). Elongated branches which may be present on the funicular segments of the male antenna (fig.6).

Squamiform setae. Enlarged and modified, usually flattened, setae present on the head and body of some species (fig.27).

Sternopleural suture. A longitudinal suture separating the ventral margin of the mesopleuron from the sternum (fig.2) (cf. mesopleural suture).

Terga (T1-T8). Metasomal terga are numbered as T1-T8. T1 is the first metasomal tergum (=petiole), T2 the first tergum posterior to the T1 (=first gastral tergum), the spiracle is on T7, the pygostylus on T8 (figs.9-10).

Wing vein ratios. Relative lengths of the wing veins are of value and these ratios are given using the abbreviations: CC = costal cell, MV = marginal vein, PMV = postmarginal vein, SV = stigmal vein (fig.8). The length of the costal cell (CC) is used instead of the submarginal vein because it is easier to measure accurately and reflects the same distance.

Sculpture (figs.17-26). The following terms are used to describe sculpture. Definitions are mainly from Harris (1979), and Eady (1968).

Coriaceous (incised) (fig.20). Leather-like in sculpture, with minute cracks like the human skin.

Elongate reticulate (raised) (fig.18). Like reticulate, but cells elongate, usually at least twice as long as wide. Some of the sculpture assigned to this type does not always have the cells completely closed at the ends (fig.18), however this seems the most appropriate term to use.

Glabrate (fig.23). Smooth or nearly so and devoid of pubescence and sculpture.

Imbricate (raised) (fig.19). Partly overlapping and appearing like shingles on a roof or scales on a fish.

Reticulate (raised) (fig.17). Superficially net-like or made up of a network of raised lines.

Rugose (raised) (fig.24). Having a wrinkled appearance.

Strigate (fig.21). Having narrow lines or streaks, either raised or impressed.

Strigulate (fig.22). Finely or minutely strigate, with numerous fine lines.

Abbreviations Used.

A1,A2	1st anellus, 2nd anellus (fig.5).
CC	Costal cell (fig.8).
F1-F6	Funicular segments 1 through 6 (fig.5).
LOL	Lateral ocellar length, the distance between the lateral ocellus and the median ocellus (fig.3).
MV	Marginal vein (fig.8).
OOL	Oculo-ocellar length, the distance between the eye margin and the lateral ocellus (fig.3).
PMV	Postmarginal vein (fig.8).
R1-R5	Rami 1-5 (i.e., the respective rami on funicular segments 1-5 on the male antenna)(fig.6).
SMV	Submarginal vein (fig.8).
SV	Stigmal vein (fig.8).
T1-T8	Metasomal terga (figs.9-10).

Measurements. In the descriptions, ranges for length represent measurements of all specimens. Other measurements and ratios are taken from a sample of 10 specimens (less when there was insufficient material). Measurements and ratios are rounded off to increments of 0.05.

Important Characters. The following are characters which are referred to in the text and are used above the species level (i.e. for defining genera, and the species groups in *Tanaostigmodes*). For every character, alternative character states are given, with (+) designating the state presumed to be derived, and (−) the ancestral state. Where characters could not be polarized with confidence both states are given as (?). Character states were polarized through comparison with the Encyrtidae (sister group) and Eupelmidae (outgroup). All characters felt to be of importance above the species level are listed here, although some of these were not used in the classification due to problems with homoplasy.

Head.

1. Frons without a transverse furrow (−) (figs.29-34,36-40,43-52); female frons with a transverse furrow extending from eye margin to scrobal impression at level halfway between torulus and median ocellus (+) (figs.35,41-42); male frons with transverse furrow extending from eye margin to scrobal impression at level halfway between torulus and median ocellus (+). (Presence of this character in females and males is considered separately because the character occurs in the males of many species whose female does not have it.)
2. Scrobal impression not carinate laterally (−) (figs.29-44,47-52); scrobal impression carinate laterally (+) (figs.45-46).
3. Interantennal projection present and small (−) (figs.30,33-34); interantennal projection present and large, strongly projecting into scrobal impression (+) (figs.36-37); interantennal projection absent (+) (figs.31-32). (Both of the derived character states are assumed to have arisen independently from the primitive state.)
4. Subocular sulcus present (?); subocular sulcus absent (?).

Antenna.

5. Female scape without strong ventral expansion, more than 3 times longer than wide (−) (figs.62-64,66-72,81-84); female scape with distinct ventral expansion, less than 3 times longer than wide (+) (figs.53-60,77-80).
6. Female scape without emarginate ventral expansion (−) (figs.58-60); female scape with ventral expansion which is emarginate apically (+) (figs.55-57).
7. Female with funicular segments neither all wider than long, nor all longer than wide; usually with some segments longer than wide, and others quadrate to wider than long (−) (figs.53-57,59-61,63-76). female with all funicular segments distinctly wider than long (+) (figs.77-79); female with all funicular segments distinctly longer than wide (+) (figs.62,81-83). (Both of the derived character states are assumed to have arisen independently from the primitive state).
8. Female with first funicular segment not greatly reduced, at least about 1/2 the length of second segment (−) (figs.54-84); female with first funicular segment anelliform, making antennal formula appear to be 11353 (+) (fig.53).
9. Male funicular segments with long rami (?) (fig.6); male funicular segments without rami (?).
10. Male funicular segments with dorsal projections (?) (fig.7); male funicular segments without dorsal projections (?).

Mesosoma.

11. Notauli complete, extending to hind margin of mesoscutum (−) (figs.1,89-90); notauli incomplete, not extending to posterior margin of mesoscutum (+) (figs.88,119-120).
12. Scutellum without lateral glabrate area (−) (figs.91-95); scutellum with lateral glabrate area (+) (fig.96).

13. Propodeum without plicae (–) (figs.97-103,115); propodeum with distinct plicae (+) (figs.111-114,116).

Wing.

14. Female forewing hyaline, or only weakly and uniformly infuscated (–) (figs.123-130,132); female forewing strongly patterned, with contrasting dark brown and hyaline areas (+) (fig.131).
15. Stigmal vein distinctly curved, at distinctly less than a right angle to postmarginal vein (–) (figs.125-129,131-132); stigmal vein straight or only slightly curved, perpendicular or nearly so to postmarginal vein (+) (figs.123-124,130).
16. Stigma not swollen (–) (figs.125-132); stigma distinctly swollen (+) (figs.123-124).
17. Basal cell without a reduced number of setae (–) (figs.123-127,129-134,136-137,139-144); basal cell with a reduced number of setae (less than 5) (+) (figs.128,135,138).
18. Speculum open to posterior margin of wing, or separated from it by only the single line of setae representing subcubital vein (–) (figs.123-128,130,132,135-136,138,140,142,144); speculum separated from posterior margin of wing by more than the single line of setae representing subcubital vein (+) (figs.133-134,137,139,141,143).

Metasoma.

19. T2 not elongate, less than half the length of the metasoma (–) (figs.155-156,160-163); T2 elongate, longer than remaining terga combined (+) (fig.157).
20. Medial line absent from metasomal terga (–) (figs.9,155-157); medial line present on at least some metasomal terga (+) (figs.10,161,163).
21. Medial incision absent from metasomal terga (–) (figs.9,157,162); medial incision present on posterior margin of at least some metasomal terga (+) (figs.10,161,163).

General.

22. Without squamiform white setae (–); squamiform white setae present on head and/or body (+) (figs.27,38-40,89).
23. Without punctures on head and/or body (–); small setiferous or non-setiferous punctures present on head and/or body (+) (fig.26); large, setiferous punctures present on head and/or body (+) (figs.25,36-37,90). (It is unclear whether large and small punctures represent two separate derived characters, or whether they are part of a multistate character. They have both arisen more than once in unrelated lineages).
24. Metallic coloration present (?); without metallic coloration (?).

Family TANAOSTIGMATIDAE Ashmead

Tanaostigmini Ashmead, 1904.

Type genus *Tanaostigma* Howard.

Tanaostigminae (as Taneostigminae) (Girault, 1915).

Tanaostigmatidae (Peck, 1951).

FEMALE. Small to medium sized chalcidoids, 0.7-3.8 mm long. Coloration usually non-metallic, black to brown or yellow, rarely wholly or partially metallic.

Head almost always wider than high. Clypeus bilobed. Maxillary palpus 4-segmented, labial palpus 3-segmented. Mandible with 3 teeth, ventral tooth largest.

Antenna with 2 anelli and 6 funicular segments, rarely with F1, or F1 and F2, reduced to size of anellus. Club weakly 3-segmented, rarely entire.

Mesosoma with prepectus large, distinctly swollen anteriorly, broadly attached posteriorly to anterior margin of mesopleuron. Pronotum short, usually vertical and not or barely visible in dorsal view. Notauli usually present, sinuate, meeting posteriorly at or near posterior margin of mesoscutum. Mesoscutum and scutellum joined by a flexible membrane which allows articulation along the scuto-scutellar suture. Mesopleuron large, convex, without groove or furrow for reception of middle femur. Middle coxa large, subspherical, attached near posterior margin of mesopleuron. Middle tibia with large spur. At least middle basitarsus, and usually all tarsal segments on middle leg, with two rows of peglike teeth on ventral surface.

Wings with marginal vein long, several times longer than wide, and usually distinctly longer than either postmarginal or stigmal veins.

Metasoma with pygostyli located near apex.

MALE. Similar to female except in sexual characters and antenna. Antenna with or without funicular rami; with or without dorsal projections on funicular segments.

COMMENTS. The first tanaostigmatid was described by Howard (1890) in the Encyrtidae. Subsequently several species were described, and Ashmead (1904) elevated this group to tribal status as the Tanaostigmini within the encyrtid subfamily Eupelminae. This was the first use of a family level name for this group, and gives authorship for the family to Ashmead. Girault (1915) first gave this group subfamily status as Taneostigminae [sic] in the Encyrtidae, where he also placed the Encyrtinae, Eupelminae, Signiphorinae, and Aphelininae. Peck (1951) first elevated this group to the family Tanaostigmatidae, and first correctly used the stigmat- root in family name formation rather than the stigm- root used by previous authors.

DISCUSSION. The Tanaostigmatidae possess a single synapomorphic character by which the family is defined as monophyletic: the prepectus is enlarged, and distinctly swollen anteriorly. The prepectus is not only

clearly visible in lateral view (figs.2,12), but also in dorsal view where it appears as a large shoulder projecting forward of the pronotum (figs.1,11). No other chalcidoids have the prepectus enlarged in this manner. Other important characters are: mesopleuron convex, without groove or furrow for reception of middle femur (figs.2,12,105-110); middle tibial spur large, saltatorial (fig.16); at least middle basitarsus, and usually all tarsal segments on middle leg, with two rows of peglike teeth on ventral surface (figs.15-16); notauli usually present, sinuate, meeting posteriorly at or near posterior margin of mesoscutum (figs.1,13); mesoscutum and scutellum joined by a flexible membrane which allows articulation along the scuto-scutellar suture (fig.13); marginal vein long, several times longer than wide, and usually longer than postmarginal or stigmal veins (fig.8); pygostyli situated at or near apex of metasoma (figs.9-10); middle coxal articulation at posterior of mesopleuron (fig.2); pronotum short, usually vertical and not or barely visible in dorsal view (figs.1-2,11-13).

RELATIONSHIPS. The Tanaostigmatidae are closely related to the Encyrtidae and Eupelmidae, and these three groups form a lineage which is considered monophyletic as members possess two derived character states which are not found in other Chalcidoidea: 1) the mesopleuron is large, convex, longer than high, and without a groove or furrow for the reception of the middle femur (figs.2,12,105-110); 2) the middle leg possesses, in combination, a large tibial spur, and one or two rows of strong, peglike spines on the ventral surface of at least the basitarsus, and usually all tarsal segments (figs.15-16). In this discussion, and elsewhere in this work, the Encyrtidae is considered in the strict sense, and does not include the Aphelinidae and Signiphoridae. These groups have occasionally been placed as subfamilies of the Encyrtidae, however they do not belong there as they lack the synapomorphies which define this entire lineage, as well as the synapomorphies which define the Encyrtidae (see below).

Within this lineage encyrtids possess the following derived character states not found in tanaostigmatids or eupelmids: antenna usually without anelli (rarely with 1) and with 4-6 funicular segments; pygostyli situated distinctly anterior to apex of metasoma; articulation of middle coxa advanced to anterior of midline of mesopleuron; marginal vein short, often punctiform, usually shorter than stigmal or postmarginal veins. Due to the absence of these derived characters, the Tanaostigmatidae and Eupelmidae have been considered more closely related to each other than either is to the Encyrtidae, and tanaostigmatids have been recently placed as a subfamily of the Eupelmidae (Burks, 1979). However, this grouping is artificial as it is based solely upon primitive characters states shared by tanaostigmatids and eupelmids.

I feel that tanaostigmatids and encyrtids are sister groups because they share two derived characters with each other which are not found in the Eupelmidae. The first is the shape of the notauli. Although most encyrtids have lost their notauli, there are a few which still have them, and in form they are very similar to those in tanaostigmatids. In both groups the notauli, when present and complete, are sinuate, converge posteriorly,

and meet at or near the posterior margin of the mesoscutum (figs.1,11,13,85-90). In eupelmids, and almost all other chalcidoids which have notauli, the notauli are straight or nearly so, and are widely separated on the posterior margin of the mesoscutum. The second derived character is the shape of the ovarian egg. LaSalle & LeBeck (1983) noted that tanaostigmatids have encyrtiform eggs (fig.14). Eggs of this type are found in all encyrtids, unknown in eupelmids, and known but rare in other chalcidoids (Hagen, 1964). On the basis of these two synapomorphies tanaostigmatids and encyrtids are considered sister groups. There is no evidence to support the Eupelmidae as a monophyletic group which is sister group to the Encyrtidae-Tanaostigmatidae, and the Eupelmidae may represent a grade level (paraphyletic) taxa. In this study the Eupelmidae is used as the outgroup (and Encyrtidae as sister group) in attempts at character polarization within the Tanaostigmatidae.

Although relationships within this lineage are not yet fully understood, the Tanaostigmatidae is treated at the family level in this work on the basis of the sister group relationship with the Encyrtidae, which is generally agreed to be deserving of family status. (The alternative would be to place the Tanaostigmatidae as a subfamily of the Encyrtidae, rather than the Eupelmidae where they have more frequently been placed, and consider the Encyrtidae as having two subfamilies: the sister groups Encyrtinae and Tanaostigmatinae).

CLASSIFICATION WITHIN THE FAMILY. This work recognizes five genera: *Tanaostigmodes* Ashmead (45 species), *Minapis* Brèthes (1 species), *Tanaostigma* Howard (11 species), *Tanaoneura* Howard (11 species), and *Microprobolos*, gen. n. (1 species). The genera *Minapis*, *Tanaostigma*, *Tanaoneura*, and *Microprobolos* are considered to represent monophyletic taxa which are based upon derived characters (see the discussions of the individual genera for the characters which define them, and Important Characters in the Morphology Section for the presumed polarity of the character states). However, derived characters were not found to define the genus *Tanaostigmodes* as monophyletic, and it appears to be a paraphyletic genus most easily recognizable because its members do not possess the derived characters seen in the other four genera. Although derived characters were found to define the genera (except for *Tanaostigmodes*), shared derived characters were not found which could elucidate relationships among genera. There is no evidence that *Minapis*, *Tanaostigma*, *Tanaoneura*, and *Microprobolos* represent one or more separate lineages from *Tanaostigmodes*, and it is conceivable that some or all of these genera arose from within the *Tanaostigmodes* lineage.

BIOLOGY. In their biology, Tanaostigmatidae are unusual among Chalcidoidea, and differ strikingly from their closest relatives. Whereas most chalcidoids (including encyrtids and eupelmids) are parasitic on other insects, tanaostigmatids are predominantly phytophagous in habit. Tanaostigmatids are mainly associated with galls, in most cases as the presumed gall-formers. There are many records of species reared from galls, however very few detailed biologies are known for this family, and

exceptions to gall-forming are known. Strict seed infestation without gall formation has been reported from India (Lateef, 1977; Lateef, et.al., 1985); and inquilinism in cecidomyiid galls is known from Brazil (Fernandes, et.al., in press), and Japan (J. Yukawa & H. Ikenaga, personal communication). The Japanese species *Cynipencyrtus flavus* Ishii, which is the only known parasitic tanaostigmatid, attacks gall-forming cynipids (Tachikawa, 1973,1978; LaSalle & Noyes, 1985). Preferred host plants for tanaostigmatids are woody trees and shrubs in the pea family Fabaceae (=Leguminosae), although species have been reared from galls on *Triplaris* (Polygonaceae), *Scutia* and *Condalia* (Rhamnaceae), and *Psidium* (Myrtaceae), and recorded as collected on several other families. In this work the Fabaceae is considered in the broad sense as including three subfamilies: Faboidea, Mimosoidea, Caesalpinoidea. These groups have often been treated as separate families. In the text, subfamilies are always given with hosts in this family.

Galls are of many types, and may be found on stems, leaves, seeds, or flowers (usually in deformed ovaries) (figs.164-177). Descriptions of the galls are given under the individual species which form them. Host associations for New World Tanaostigmatidae are listed in Appendix 7 (p.176). Questionable host records are not included in the host list, or in the biology section under the individual species.

DISTRIBUTION. Tanaostigmatidae are mainly tropical in distribution, and are known from tropical and subtropical regions in the Americas, Australia, Asia and Africa (although no species have been described from Africa, a few undetermined species have been reported by Prinsloo, 1980). The New World is by far the richest area for tanaostigmatids in both number of species and diversity. Seventy-four species are now known from the New World, with only fourteen described from other geographic areas. In the New World they extend from central Argentina northward throughout South and Central America and reach the subtropical areas of the United States: southern Florida and the desert regions of the southwest.

The genera *Minapis*, *Tanaostigma*, *Microprobolos* and *Tanaoneura* are strictly New World in distribution. *Tanaostigmodes* is pantropical, and most of the Old World species of Tanaostigmatidae I have seen belong to this genus.

Distribution is given under each individual species by country, or by country and state for the four largest countries (United States, Mexico, Brazil, and Argentina).

Key to New World Genera of Tanaostigmatidae
(Based on females)

- 1 Forewing strongly patterned, with contrasting dark brown and hyaline areas (fig.131). Propodeum long, without median carina or plicae, length at spiracle 6 times diameter of spiracle (fig.115). Metasoma with T1 (petiole) clearly visible; T2 longer than remaining segments combined (fig.157).
..... *Minapis* Brèthes (p.92)
- 1' Forewing hyaline, or at most faintly and uniformly infuscated. Propodeum usually shorter, if somewhat lengthened then plicae are present (figs.111-114). Metasoma with T1 (petiole) usually not visible, T2 usually not so long.
..... 2
- 2(1) Large, flattened white setae present on head and/or mesosoma (figs.38-40,89). If these setae absent, then the following characters all present: all funicular segments distinctly wider than long (figs.77-79); stigmal vein slender, straight or only slightly curved, and perpendicular or nearly so to postmarginal vein (fig.130); scape 1.5-2.5 times longer than wide with flattened ventral expansion (figs.77-80).
..... *Tanaostigma* Howard (p.94)
- 2' Without large, flattened white setae. Never with all funicular segments distinctly wider than long. Stigmal vein usually otherwise; if straight and perpendicular to postmarginal vein, then stigma distinctly swollen. Scape variable.
..... 3
- 3(2) Face and frons with large, setiferous punctures (figs.36-37,49-50,52).
..... 4
- 3' Face and frons without large, setiferous punctures.
..... *Tanaostigmodes* Ashmead (most) (p.13)
- 4(3) Propodeum with strong median carina and very strong plicae which converge and meet medially before the posterior margin of propodeum (fig.116). Interantennal projection small (fig.52).
..... *Microprobolos*, gen. n. (p.133)
- 4' Propodeum not as above, if plicae present, then these are parallel and do not meet medially (fig.104, and as in figs.111-114). Interantennal projection prominent to small.
..... 5

- 5(4) Interantennal projection present and prominent (figs.36-37,49-50).
F1-F5 and usually F6 distinctly longer than wide (figs.81-82).
..... *Tanaoneura* Howard (p.114)
- 5' Either interantennal projection very small or absent, or at least
several funicular segments not distinctly longer than wide. (Few
species would key here).
..... *Tanaostigmodes* Ashmead (part) (p.13)

Genus *TANAOSTIGMODES* Ashmead

Tanaostigmodes Ashmead, 1896:9,18-19. Type species *Tanaostigmodes howardii* Ashmead, 1896, by original designation.

Monopleurothrix Mayr, 1905:179-181. Type species *Monopleurothrix kiefferi* Mayr, 1905, by monotypy. **Syn. n.**

Dendrosema Kieffer & Jörgensen, 1910:419. Type species *Dendrosema coeruleum* Kieffer & Jörgensen, 1910, by subsequent designation (Gahan & Fagan, 1923:42). **Syn. n.**

Eutetracera Brèthes, 1924:24. Type species *Eutetracera ringueleti* Brèthes, 1924, by monotypy. **Syn. n.**

Eutricnemus Blanchard, 1940:107. Type species *Eutricnemus coccophagus* Blanchard, 1940, by monotypy. **Syn. n.**

DIAGNOSIS. *Tanaostigmodes* is characterized by the lack of synapomorphies used to define the other four genera. Without synapomorphies, diagnosis becomes difficult, and the description must serve as such. Certain characteristics used to define the other genera are occasionally found in *Tanaostigmodes* (e.g. large setiferous punctures, all funicular segments longer than wide), but never in the same combination as found in other genera.

FEMALE. Sculpture and setal types variable, however never with squamiform white setae, and only rarely with large, shallow punctures; sometimes with minute punctures.

Head with scrobal cavity usually shallow and without a well-defined lateral margin. Interantennal projection usually present and small; sometimes absent; sometimes present and prominent. Subocular sulcus from present and complete to incomplete or absent.

Antenna with scape variable, from 1.3 times longer than wide with large, flattened ventral expansion to 6.0 times longer than wide without ventral expansion. Funicle variable, usually F1 longer than wide, each successive segment slightly shorter than preceding one to F6, which is subequal in length and width.

Mesosoma with notauli present, usually complete, sometimes incomplete. Propodeum variable, usually short, with or without plicae and median carinae. Sternopleural suture usually not reaching anterior margin of mesopleuron, may be connected to mesopleural suture.

Wings usually hyaline, rarely with faint infuscation over entire wing. Venation and setation variable, usually with stigmal vein curved and at a distinct angle to postmarginal vein.

Metasoma. Posterior margin of T2-T5 may have medial incision. Medial line may be present on T2-T5.

MALE. Antenna may have three to five long funicular rami; may be without rami but with dorsal projection on funicular segments. Frons may have transverse furrow halfway between torulus and median ocellus.

DISCUSSION. *Tanaostigmodes* is the largest and most poorly defined of the tanaostigmatid genera. It is characterized by the absence of the derived characters used to define the other genera, and as such is probably a paraphyletic group.

This genus is divided into twenty species groups (with 8 of these containing a single species). The species groups, with the possible exception of the Tychii Group, are felt to represent monophyletic taxa, although the relationships between them could not be clarified. The species groups are intended solely to help the user visualize groups of closely related species. As species groups they do not have (nor are they intended to have) any nomenclatural standing. Some of these groups may eventually prove to be worthy of higher ranking, however I feel that additional species will have to be found and studied to clarify relationships before such decisions can be made.

The characters used to define each group are given in the text under that group (polarities for these characters are given in the Important Characters section under Morphology).

Key to New World Species Groups and Species of *Tanaostigmodes*.
(Based on females)

- 1 F1 reduced to size of anellus, distinctly less than half the length of F2, making antennal formula appear to be 11353 (fig.53). Frons with transverse furrow halfway between torulus and median ocellus (figs.41-42, see also fig.35). (**Anellarius Group**).
..... 22
- 1' F1 not so reduced, at least half the length of F2; antennal formula clearly 11263 (figs.54-76). Frons usually without (rarely with) transverse furrow.
..... 2

- 2(1) Stigmal vein straight, perpendicular to postmarginal vein, and distinctly swollen apically (figs.123-124). Postmarginal vein shorter than stigmal vein. Mesopleuron entirely reticulate (fig.105). Scape with flattened ventral expansion, less than 3.0 times longer than wide (fig.54). (**Flavicorpus Group**).
..... 23
- 2' Stigmal vein not as above, never distinctly swollen apically, rarely almost straight, but then not perpendicular to postmarginal vein (figs.125-128). Length of postmarginal vein, sculpture on mesopleuron, and width of scape variable.
..... 3
- 3(2) Frons with transverse furrow halfway between torulus and median ocellus (fig.35).
..... 4
- 3' Frons without transverse furrow (figs.29-34,43-47).
..... 5
- 4(3) Notauli complete (fig.85). Speculum separated from posterior margin of wing by more setae than a single line representing subcubital vein (figs.133-134). (**Minutus Group**).
..... 24
- 4' Notauli incomplete, neither meeting nor reaching the posterior margin of the mesoscutum (fig.119). Speculum open to the posterior margin of the forewing (fig.140). (**Aulafrons Group**).
..... *aulafrons*, sp. n. (p.48)
- 5(3) Scape with large, flattened, ventral expansion; distinctly less than 3.0 times longer than wide (figs.55-60).
..... 6
- 5' Scape without flattened ventral expansion, or with only slight ventral expansion; more than 3.0 times longer than wide (figs.62-64,66-72).
..... 10
- 6(5) Scape distinctly emarginate at apex (figs.55-57).
..... 7
- 6' Scape not distinctly emarginate at apex; at most slightly incised in apical half (figs.58-60).
..... 8

- 7(6) Propodeum short, without plica (fig.97). Speculum extending to posterior margin of wing, or at most separated by a single line of setae representing the subcubital vein (figs.135-136). Subocular sulcus absent. (**Emarginatus Group**).
 25
- 7' Propodeum somewhat lengthened, with strong plicae (fig.111). Speculum separated from posterior margin of wing by more setae (on the ventral surface of the wing) than a single line representing the subcubital vein (fig.137). Subocular sulcus present. (**Carinatus Group**).
 27
- 8(6) Propodeum with strong plicae, and strong transverse carina along posterior margin which connects plicae (fig.112). Mesopleuron glabrate. Scutellum coriaceous. (**Dilatus Group**).
 28
- 8' Propodeum without plicae or transverse carina (figs.99-100). Sculpture on mesopleuron and scutellum variable.
 9
- 9(8) Basal cell with 5 or fewer setae (fig.138). Subocular sulcus absent, or present but very short and only represented just ventral to eye. (**Basilaris Group**).
 29
- 9' Basal cell with 10 or more setae. Subocular sulcus variable, usually present.
 10
- 10(5,9) Body with at least some distinctly metallic coloration.
 11
- 10' Body without metallic coloration.
 13
- 11(10) A2 quadrate, almost as long as wide, distinctly longer than A1 (fig.76). Head and body deep metallic blue, dorsum of metasoma yellow, legs and antenna with yellow markings. (**Coeruleus Group**).
 *coeruleus* (Kieffer & Jörgensen) (p.86)
- 11' A2 subequal in size to A1, or at most only slightly longer than A1 and still distinctly wider than long (figs.62-74). Color not as above.
 12

- 12(11) Marginal vein more than 2.5 times longer than either postmarginal vein or stigmal vein (fig.147). Head almost circular in frontal view, subequal in height and width (fig.44). Head and body metallic green to blue. (**Viridis Group**).
 *viridis*, sp. n. (p.90)
- 12' Marginal vein less than 2.0 times longer than either postmarginal vein or stigmal vein (figs.125-128). Head distinctly wider than high in frontal view (figs.31-34,45-47). Color not as above.
 13
- 13(10,12) Funicle slender, all segments distinctly longer than wide (fig.62). Subocular sulcus absent. Mesopleuron strigulate anteriorly, glabrate posteriorly. (**Gracilis Group**).
 30
- 13' At least some funicular segments wider than long or subequal in length and width (figs.63-74). Subocular sulcus present or absent; sculpture on mesopleuron variable.
 14
- 14(13) Marginal fringe completely absent (fig.128). Basal cell usually without setae, may have 1-2 setae. Body dark brown to black. (**Coccophagus Group**).
 *coccophagus* (Blanchard) (p.69)
- 14' Marginal fringe present at least along posterior margin of forewing just distal to frenal fold (figs.125-127). Basal cell with more than 5 setae. Body color variable.
 15
- 15(14) Scrobal impression carinate laterally (figs.45-46). Interantennal projection prominent. Each successive funicular segment wider (in lateral view) than preceding one; F6 noticeably wider than F1; club wider than F6 (fig.66). (Note: *T. insculptus* has the antenna somewhat similar to this (fig.67), but differs in the other characters). (**Desantisi Group**).
 31
- 15' Scrobal impression variable, however never carinate laterally, rarely sharply rounded (figs.31-34,47). Interantennal projection variable. Funicular segments and club all approximately equal in width, or some segments slightly narrower than preceding segment (figs.63-65,68-74).
 16

- 16(15) Scutellum coriaceous (fig.91). Speculum separated from posterior margin of wing by more setae (on ventral surface) than a single line representing subcubital vein (fig.139). Face and frons with scattered, minute punctures (figs.31,47).
 17
- 16' Scutellum reticulate, imbricate, or with otherwise raised sculpture. Speculum usually open to posterior margin of wing, or at most separated by a single line of setae representing subcubital vein (figs.125-127); only rarely separated from posterior margin of wing by more setae than a single line. Face and frons usually without, rarely with, scattered minute punctures.
 18
- 17(16) Interantennal projection absent (fig.31). Toruli separated from each other by a distance distinctly greater than diameter of torulus. (**Kiefferi Group**).
 *kiefferi* (Mayr) (p.55)
- 17' Interantennal projection small but present (fig.47). Toruli separated from each other by a distance only slightly, if at all, greater than diameter of torulus. (**Insculptus Group**).
 *insculptus*, sp. n. (p.54)
- 18(17) Interantennal projection absent (fig.32). Club and funicle always concolorous, brown to dark brown; never with funicle dark and club yellow to white. Body brown to dark brown, never with metallic color. (**Fisheri Group**).
 32
- 18' Interantennal projection present, usually pointed dorsally, although sometimes small (figs.33-34). Club, funicle, and body variable in color.
 19
- 19(18) Notauli easily visible, and incomplete, neither meeting nor extending to posterior margin of mesoscutum (figs.88,120).
 20
- 19' Notauli complete to posterior margin of mesoscutum, usually meeting before reaching posterior margin, although sometimes extremely fine and very difficult to see.
 21
- 20(19) Dorsum of mesosoma with at least slight metallic shine. Notauli narrow. (**Tenuisulcus Group**).
 *tenuisulcus*, sp. n. (p.67)
- 20' Dorsum of mesosoma without metallic coloration. Notauli somewhat thickened (fig.88). (**Howardii Group**).
 36

- 21(19) Head and body with metallic green to blue shine, dorsum of metasoma brown to yellow. (**Tricolor Group**).

..... *tricolor*, sp. n. (p.88)

- 21' Species without any metallic coloration or shine. (**Tychii Group**).

..... 37

Anellarius Group

- 22(1) Frons with one transverse furrow halfway between torulus and median ocellus, another transverse furrow just ventral to median ocellus, and longitudinal furrow bordering inner orbit between them (fig.42). Marginal vein and postmarginal vein swollen at junction with stigmal vein (fig.146).

..... *sulcatus*, sp. n. (p.43)

- 22' Frons with single transverse furrow halfway between torulus and median ocellus (fig.41). Marginal vein and postmarginal vein not swollen at junction with stigmal vein (fig.145).

..... *anellarius*, sp. n. (p.42)

Flavicorpus Group

- 23(2) Basal cell with 20 or more setae on dorsal surface of wing (fig.123). Apex of postmarginal vein extending distinctly farther distally than most distal point of stigma.

..... *flavicorpus* (Girault) (p.24)

- 23' Basal cell with 12 or fewer setae on the dorsal surface of the wing (fig.124). Apex of postmarginal vein extending as far distal as, but not farther than, most distal point of stigma.

..... *haematoxyli* (Dozier) (p.26)

Minutus Group

- 24(4) Entire body concolorous, uniformly light brown to yellow except for dark scrobal impression. Basal cell with 65-100 setae on dorsal surface of wing (fig.134).

..... *pithecellobiae*, sp. n. (p.45)

- 24' Body not concolorous, head and dorsum of mesosoma dark brown to brown, conspicuously darker than light brown to yellow metasoma. Basal cell with 35-50 setae on dorsal surface of wing (fig.133).

..... *minutus*, sp. n. (p.46)

Emarginatus Group

- 25(7) F1 distinctly shorter (about half the length) than F2 (fig.55). Basal cell with fewer than 10 setae (fig.135). Frons glabrate (fig.29). Dorsum of mesosoma coriaceous to imbricate (fig.86).

..... *meltoni*, sp. n. (p.28)

- 25' F1 as long as or longer than F2 (fig.56). Basal cell with more than 20 setae (fig.136). Frons reticulate or coriaceous (fig.30). Dorsum of mesosoma reticulate (fig.87).

..... 26

- 26(25) Frons coriaceous, with many minute punctures. Pedicel entirely black.

..... *peruviensis*, sp. n. (p.30)

- 26' Frons reticulate, without punctures (fig.30). Pedicel at least white apically, may be entirely white.

..... *emarginatus*, sp. n. (p.31)

Carinatus Group

- 27(7) Hind femur with distinct tooth on ventral margin near apex (fig.149). Scutellum entirely coriaceous. Head and body honey yellow.

..... *fernandesi*, sp. n. (p.34)

- 27' Hind femur without tooth (fig.150). Scutellum coriaceous anteriorly, with large glabrate area in posterior half. Head and body black.

..... *carinatus*, sp. n. (p.33)

Dilatus Group

- 28(8) Face, frons, and pleural region of mesosoma predominantly light brown. Ventral expansion of scape slightly incised in apical half (fig.59).

..... *dilatus*, sp. n. (p.36)

- 28' Face, frons, and pleural region of mesosoma predominantly dark brown. Ventral expansion of scape smoothly rounded apically (fig.60).

..... *latiscapus*, sp. n. (p.37)

Basilaris Group

- 29(9) Propodeum with strong transverse carina medial to spiracle (fig.99). Dorsum of mesosoma coriaceous. Scape dark brown with yellow marking near apex.

..... *tripolaris*, sp. n. (p.40)

- 29' Propodeum without transverse carina (fig.100). Dorsum of mesosoma predominantly reticulate (fig.11). Scape uniformly light brown.

..... *basilaris*, sp. n. (p.39)

Gracilis Group

- 30(13) Scutellum reticulate. Basal cell with more than 25 setae.

..... *gracilis*, sp. n. (p.49)

- 30' Scutellum coriaceous. Basal cell with fewer than 20 setae.

..... *dominicensis*, sp. n. (p.50)

Desantisi Group

- 31(15) Scutellum coriaceous anteriorly, glabrate posteriorly. Hind femur with tooth on ventral margin near apex (fig.151). Face and frons with numerous large, shallow, setiferous punctures (fig.45).

..... *punctus*, sp. n. (p.52)

- 31' Scutellum reticulate anteriorly, coriaceous posteriorly. Hind femur without tooth (fig.152). Face and frons with scattered, minute punctures (fig.46).

..... *desantisi*, sp. n. (p.51)

Fisheri Group

- 32(18) Propodeum with strong plicae, and strong transverse carina along posterior margin connecting plicae (fig.113). Face and frons with prominent white setae. Mesoscutum with many large, very shallow, setiferous punctures.

..... *madrensis*, sp. n. (p.57)

- 32' Propodeum without plicae or transverse carina (fig.101). Setation on face and frons variable, but without prominent white setae. Mesoscutum without punctures, or at most with minute, setiferous punctures.

..... 33

- 33(32) Scape yellow (may be somewhat darkened dorsally), in contrast to brown to black flagellum.

..... 34

- 33' Scape brown to dark brown, concolorous or almost so with flagellum.

..... 35

- 34(33) F1 slightly but noticeably shorter than F2 (fig.64). Posterior margin of T2-T4 straight, or at most with slight emargination medially, but without distinct, apically pointed, medial incision (fig.155).

..... *yuohuae*, sp. n. (p.60)

- 34' F1 as long as or longer than F2 (fig.63). Posterior margin of T2-T4 with distinct, apically pointed, medial incision (fig.156).

..... *fisheri*, sp. n. (p.58)

- 35(33) Mesoscutum predominantly reticulate. Notauli complete (although difficult to see).

..... *anexochus*, sp. n. (p.61)

- 35' Mesoscutum predominantly imbricate. Notauli incomplete, neither meeting nor continuing to posterior margin of mesoscutum (although difficult to see).

..... *brevisulcus*, sp. n. (p.62)

Howardii Group

- 36(35) Basal cell densely setose, with over 100 setae (fig.141). Speculum separated from posterior margin of forewing by more setae than a single row representing subcubital vein. Body yellow and black.
 *howardii* Ashmead (p.63)
- 36' Basal cell with fewer than 40 setae (fig.142). Speculum open to posterior margin of forewing. Body orange to brown.
 *tescus*, sp. n. (p.66)

Tychii Group

- 37(21) F1 wider than long, distinctly shorter (about half the length) than F2 (figs.69-70). Marginal fringe at most extending to apex of wing (figs.125-126).
 38
- 37' F1 longer than wide, as long as or longer than F2 (figs.71,73-74). If F1 appears slightly shorter than F2, than marginal fringe extending past apex of wing (fig.127).
 41
- 38(37) Scape more than 4.5 times longer than wide (fig.69). Tegula entirely black.
 *mosesi*, sp. n. (p.81)
- 38' Scape less than 4.0 times longer than wide (fig.70). Tegula at least partially white.
 39
- 39(38) Basal cell with more than 30 setae on dorsal surface of wing. Scutellum uniformly reticulate, without elongation of cells anteromedially (fig.92).
 *larsoni*, sp. n. (p.76)
- 39' Basal cell with fewer than 25 setae on dorsal surface of wing. Scutellum not uniformly reticulate, cells (particularly anteromedially) longitudinally elongate (fig.93).
 40
- 40(39) Metasoma predominantly dark brown dorsally, white ventrally. Frons black with white spot bordering eye at level of toruli.
 *sonorensis*, sp. n. (p.79)
- 40' Metasoma yellow, dusky dorsally, with longitudinal black stripe laterally. Frons black, without white spot.
 *xanthogaster*, sp. n. (p.77)
- 41(37) Scutellum with distinct longitudinal sculpture in the form of raised, parallel lines (fig.94).
 42
- 41' Scutellum reticulate, the reticulations not or barely elongated.
 44

- 42(41) Club entirely white to yellow. F5 and F6 may be light brown to yellow or white.
 *albiclavus* Girault (p.71)
- 42' Club entirely black to dark brown, or at least black to dark brown basally and light brown to yellow apically. F5 and F6 always black to dark brown.
 43
- 43(42) Mesoscutum with strong, silver to white setae. Club entirely black to dark brown.
 *ringueleti* (Brèthes) (p.73)
- 43' Mesoscutum with dark brown to black setae. Club dark brown to black basally, may be light brown to yellow apically.
 *mexicanus*, sp. n. (p.74)
- 44(41) Head and body lemon yellow.
 *tetartus* Crawford (p.85)
- 44' Head and body brown.
 45
- 45(44) Subocular sulcus present. Ventral expansion of scape uniformly rounded, widest medially (fig.73). Frons and vertex without punctures. Marginal fringe not reaching apex of forewing.
 *tychii* Ashmead (p.82)
- 45' Subocular sulcus absent. Ventral expansion of scape not uniformly rounded, distinctly widest in apical half (fig.74). Frons and vertex with many small punctures. Marginal fringe extending at least to apex of forewing.
 *koebelei*, sp. n. (p.84)

FLAVICORPUS Group

Females of the Flavicorpus Group are distinguished by the following combination of characters: stigmal vein nearly straight, perpendicular to postmarginal vein, and distinctly swollen at apex (a character unique to this group) (figs.123-124); postmarginal vein shorter than stigmal vein; mesopleuron entirely reticulate (fig.105); scape 2.2-3.0 times longer than wide with flattened ventral expansion (fig.54); interantennal projection very small to absent. Males have 4 or 5 long funicular rami, and do not have a transverse furrow on the frons.

Two species are included in this group, *flavicorpus* and *haematoxyli*.

Tanaostigmodes flavicarpus (Girault), comb. n.

Figure 123.

Tanaostigma flavicarpus Girault, 1917:3 (as *Taneostigma flavicarpus*).

Lectotype ♀ (present designation), MEXICO, Morelos (USNM, #20081) [examined].

DIAGNOSIS. Females of *T. flavicarpus* are distinguished from other species of *Tanaostigmodes* by the following characters: stigma strongly swollen (fig.123); stigmal vein straight, nearly perpendicular to the postmarginal vein; postmarginal vein shorter than stigmal vein; basal cell with 20 or more setae on dorsal surface of wing; apex of postmarginal vein extending distinctly farther distally than most distal point of stigmal vein. This species is most closely related to *T. haematoxyli* (see discussion section under this species).

FEMALE. Length 1.3-2.15 mm. Face yellow, frons orange-brown, with two faint, transverse brown stripes; a narrow stripe at the level of the toruli and a wider one just dorsal of the first through the scrobal impression; the dorsal stripe can appear as two very close smaller stripes. Occiput orange brown, with a dark brown area around occipital cavity which extends to the median ocellus. Antennal scape yellow, with translucent ventral expansion; club and A1 white to light yellow; pedicel, A2, and F1-F6 dusky yellow, pedicel darkened dorsally. Dorsum of mesosoma brown medially, becoming orange laterally; mesopleuron, prepectus ventrally, thoracic sterna and coxae orange; prepectus dorsally and tegula yellow. Metasoma brown, becoming orange laterally. Head, dorsum of mesosoma except for a median strip on the scutellum, and metasoma covered with silvery white setae.

Head 1.55-1.65 times wider than high. Lateral ocellus closer to eye margin than to median ocellus (OOL/LOL 0.6-0.9). Scrobal impression very shallow, reticulate. Toruli inserted at or slightly above level of ventral margin of eye. Interantennal projection very small to absent. Subocular sulcus present, although may be faint and difficult to see. Face and frons reticulate.

Antenna with scape 2.5-3.0 times longer than wide, with flattened, ventral expansion. Pedicel 1.3-1.55 times longer than wide. A1 about half as long and slightly narrower than A2. All funicular segments from subequal in length and width to slightly wider than long. Club 1.8-2.0 times longer than wide, subequal in width to F6.

Mesosoma reticulate dorsally. Propodeum reticulate, with some longitudinal elongation of the reticulation medially, but no carina. Mesopleuron reticulate. Sternopleural suture not reaching anterior margin of mesopleuron, may be connected to mesopleural suture. Mesopleural suture may be very faint to absent. Metapleuron small, slightly sunken beneath lateral margin of propodeum.

Wings hyaline. Forewing (fig.123) with submarginal vein and marginal vein light brown; stigmal vein and postmarginal vein darkened, particularly the neck of the stigmal vein which is dark brown. Stigmal vein

straight, perpendicular to postmarginal vein, and distinctly swollen at apex. Postmarginal vein projecting slightly but noticeably further distally than the most distal point of the stigmal vein. Marginal fringe extending to just past apex of wing. Basal cell with 20-32 setae. CC/MV 2.25-2.95, MV/PMV 2.0-3.0, MV/SV 1.6-1.8, PMV/SV 0.65-0.8.

Metasoma reticulate to elongate reticulate. T2 and T3 with median line. Posterior margin of T3 with medial incision equal to about half its length; posterior margin of T2 and T4 with slight medial incision.

MALE. Length 1.9 mm. Coloration as in female except: stripes on frons distinct, brown; antenna brown except club apically yellow. Antenna with funicular rami on F1-F5; each ramus slightly shorter than preceding one; ramus on F5 about equal in length to F6. Each successive funicular segment slightly longer than the previous one; F5 approximately equal in length to F6. F6 without ramus, but with definite dorsal projection distally.

VARIATION. Specimens from Baja California Sur differ from the Morelos specimens as follows: in Baja California Sur specimens female length is 1.3-1.7 mm., OOL/LOL 0.6-0.65, scape 2.8-3.0 times longer than wide; in Morelos specimens female length is 1.8-2.15 mm., OOL/LOL 0.8-0.9, scape 2.5-2.6 times longer than wide.

DISTRIBUTION. MEXICO: Morelos, Baja California Sur.

BIOLOGY AND HOSTS. Unknown.

MATERIAL EXAMINED. Lectotype ♀, MEXICO, Morelos, A. Koebele (USNM).

Paralectotypes. As lectotype (2♀, 1♂, USNM).

Non-type material. MEXICO, Baja California Sur: Las Barracas, ~30 km. E. Santiago, 16.iv and 14.v.1984, P. DeBach, yellow pan trap (2♀, UCR. 1♀: BMNH, CNC, LAS).

COMMENTS. The type series consists of three point-mounted specimens (2 female, 1 male) and one slide with one male antenna, and one female head with both antennae and both mandibles removed, all of these mounted under the same cover slip. The male antenna on the slide is almost certainly from the point-mounted male specimen. The female head, antennae and mandibles are clearly not from either of the point-mounted specimens and must represent a fourth specimen in the type series.

DISCUSSION. *T. flavicarpus* is very closely related to *T. haematoxyli*, and these species are difficult to distinguish from each other. I have a few females (from Baja California Sur) which can not adequately be placed to either species using the characters given in the key. It may prove that these species will have to be synonymized in the future as more material becomes available, particularly as there is variation within each species. There does appear to be a good character for distinguishing males: in *flavicarpus* the male has 5 long funicular rami (and a very short sixth one),

and F6 is equal in length to F5; in *haematoxyli* the male has 4 long funicular rami (sometimes a short fifth one), and F6 is shorter than F5. Unfortunately, only a single male specimen is known for *flavicarpus*.

Characters that may also prove useful in separating these species, but may not hold in every instance are: in *flavicarpus* the stigmal vein is slightly darkened basally, and the metapleuron is slightly sunken below level of the mesopleuron and propodeum; in *haematoxyli* the stigmal vein is not darkened basally, and the metapleuron is confluent with the mesopleuron and propodeum.

Tanaostigmodes haematoxyli (Dozier), comb. n.

Figures 15, 54, 105, 124, 164.

Tanaostigma haematoxyli Dozier, 1932:104-105. Holotype ♀, HAITI, Hinche (USNM, #43939) [examined].

DIAGNOSIS. Females of *T. haematoxyli* are distinguished from other species of *Tanaostigmodes* by the following characters: stigma strongly swollen (fig.124); stigmal vein straight, nearly perpendicular to the postmarginal vein; postmarginal vein shorter than stigmal vein; basal cell with 12 or less setae on dorsal surface of wing; apex of postmarginal vein extending as far distally as, but no farther than, most distal point of stigmal vein. This species is most closely related to *T. flavicarpus* (see discussion section under that species).

FEMALE. Length 0.9-1.85 mm. Face yellow; frons brown to orange-brown, with three narrow transverse brown stripes, the ventral stripe at the level of the torulus, the dorsal stripe being slightly over half the distance from the torulus to the anterior ocellus. Scrobal impression dark brown medially. Occiput and vertex dark brown, becoming orange to yellow near the eye margins and on the gena. Antennal scape yellow, with translucent ventral expansion; club and A1 white to light yellow; pedicel, A2 and F1-F6 dusky yellow, with funicular segments darkened apically and pedicel darkened dorsally. Dorsum of mesosoma brown medially, becoming orange laterally; mesopleuron, prepectus ventrally, thoracic sterna and coxae orange; prepectus dorsally and tegula yellow. Metasoma brown, turning to orange laterally. Head, dorsum of mesosoma except for a median strip on the scutellum, and metasoma covered with silvery-white setae.

Head 1.15-1.65 times wider than high. Lateral ocellus nearer to eye margin than to median ocellus (OOL/LOL 0.55-0.85). Scrobal impression shallow, reticulate. Toruli inserted at or slightly above level of ventral margin of eye. Interantennal projection very small to absent. Subocular sulcus absent or only very faintly represented near ventral margin of eye. Head reticulate.

Antenna (fig.54) with scape 2.2-3.0 times longer than wide, with flattened ventral expansion. A1 about half as long as, slightly narrower than A2. All funicular segments from subequal in length and width to

slightly wider than long. Club 1.5-1.9 times longer than wide, subequal in width to F6.

Mesosoma reticulate dorsally. Propodeum reticulate with some elongation of the reticulation medially, but no medial carina. Mesopleuron (fig.105) wholly reticulate. Sternopleural suture not reaching anterior margin of mesopleuron, may be connected to mesopleural suture. Mesopleural suture may be very faint to absent. Metapleuron small, confluent with lateral edge of propodeum.

Wings hyaline, veins light brown to yellow. Forewing (fig.124) with stigmal vein straight, perpendicular to postmarginal vein, and distinctly swollen at apex. Postmarginal vein projecting as far distally as, but not further than, the most distal point of stigmal vein. Marginal fringe extending almost to wing tip. Basal cell with 5-12 setae. CC/MV 2.05-2.7, MV/PMV 3.65-5.15, MV/SV 1.75-2.4, PMV/SV 0.35-0.6.

Metasoma reticulate to elongate reticulate. T2-T4 with median line. Posterior margin of T3 with deep medial incision, equal to about half the length of the tergum; posterior margin of T2 and T4 with slight medial incision.

MALE. Length 1.2-1.65 mm. Coloration as in female except: antenna brown; scape, pedicel basally, club apically yellow to light brown (and see discussion of male color under variation). Antenna with long funicular rami on F1-F4 or F5 (the ramus on F5 can vary from a small dorsal projection distally to a ramus about 1/2 the length of F6). Each ramus shorter than preceding one; each funicular segment longer than preceding one except F6 noticeably shorter than F5.

VARIATION. Specimens from Michoacan, Mexico differ from Caribbean material as follows: lateral ocellus generally closer to eye in Michoacan specimens (OOL/LOL 0.5-0.6) than in Caribbean specimens (OOL/LOL 0.55-0.85); Michoacan females have ventral expansion of scape with a very slight incision on apical half, and no median line on T4; as compared to no apical incision on scape and a median line present on T4 in Caribbean females. Michoacan males have a darker face, with dark brown color extending well down the frons and two distinct, dark brown, transverse stripes across the face, the lower stripe at the level of the toruli; Caribbean males have a lighter colored face, mainly yellow, with brown color not present ventral to anterior ocellus, and at most poorly defined, very light and/or incomplete transverse stripes on the face.

DISTRIBUTION. HAITI, JAMAICA, CUBA, CAYMAN ISLANDS, WINDWARD ISLANDS: Dominica, MEXICO: Michoacan.

BIOLOGY AND HOSTS. Dozier (1932) gave the biology of *T. haematoxyli*, which was at that time a severe pest, infesting seeds of *Haematoxylon campechianum* (Fabaceae; Caesalpinoidea) in Haiti.

Also from galls on *Haematoxylon brasiletto* in Michoacan, Mexico. Galls are round, minute (less than 2 mm.), light brown, and attached to the midribs on the underside of the leaves (fig.164).

MATERIAL EXAMINED. **Holotype** ♀, **HAITI**, Hinche, 18.i.1930, H.L. Dozier, seeds of *Haematoxylon campechianum* (USNM, on slide in balsam).

Allotype ♂, as holotype (USNM).

Paratypes. **HAITI**: as holotype (3♀, 4♂, USNM); Damien, iii.1931, H.L. Dozier, seeds of *Haematoxylon campechianum* (7♀, 5♂, USNM).

Non-type material: **JAMAICA**: Trelawney, iv.1960, F.D. Bennett (1♀, USNM); Brumelia, near Mandeville, 2-11.iii.1931, G.S. Miller (1♀, USNM); Stony Hill, 25.iv.1941, Chapin (1♀, USNM); St. Thomas Parish, Morant Bay (at Morant R.), 3&6.iv.1975, E.E. Grissell, on *Gynerium sagittatum* [Poaceae] (4♀, USNM; 4♀, FSCA. 1♀: BMNH, CNC, LAS, UCR, AEI, MLP, TAMU); Portland Parish, Olive Mt., nr. Durham, 3.iv.1975, E.E. Grissell, on *Gynerium sagittatum* [Poaceae] (3♀, USNM; 3♀, FSCA); Falmouth, iv.1960, F.D. Bennett, on *Casuarina* [Casuarinaceae] (1♀, BMNH). **CUBA**: Santiago de las Vegas, 10.iii.1937, L.C. Scaramuzza, campeche (1♀, ♂, USNM); **HAITI**: Kinscoff, La Decouverte, 5000 ft., 10.iii.1955, A.M. Nadler (1♀, AMNH); **CAYMAN ISLANDS**: Georgetown, Grand Cayman Island, 15-31.iii.1965, I.R. McClintock, malaise trap (1♀, CNC); **WINDWARD ISLANDS**: Dominica, Grand Savane, 8.ix.1965, D.L. Jackson (1♀, USNM); **MEXICO**, Michoacan: 3 km. N. Capirio, 12.vii.1981, J. LaSalle, on *Haematoxylon brasiletto* (2♀, 9♂, UCR; 1♀, 2♂, LAS).

EMARGINATUS Group

Females of the Emarginatus Group are distinguished by the following combination of characters: scape with large, flattened, ventral expansion (less than 2.0 times longer than wide), which is emarginate at apex (figs.55-56); propodeum short, without plicae (fig.97); speculum open to posterior margin of wing (fig.135-136); posterior margin of T2-T4 entire, or with weak median incision; subocular sulcus absent or very weak. Males (unknown for *peruviansis*) have long funicular rami; and the frons with a transverse furrow at level halfway between torulus and median ocellus; ventral expansion of scape not emarginate, incised in apical half.

Three species are included in this group, *peruviansis*, *meltoni*, and *emarginatus*.

Tanaostigmodes meltoni LaSalle, sp. n.

Figures 29, 55, 86, 97, 135, 165.

DIAGNOSIS. Females of *T. meltoni* are distinguished from other species of *Tanaostigmodes* by the following characters: scape with large ventral expansion, which is emarginate apically (fig.55); propodeum short, without plicae (fig.97); speculum open to posterior margin of wing (fig.135); posterior margin of T2-T4 without medial incision; F1 distinctly shorter (about half the length) than F2 (fig.55); basal cell with fewer than 10 setae (fig.135); frons glabrate (fig.29); mesosoma coriaceous to imbricate (fig.86).

FEMALE. Length 1.1-1.7 mm. Head black; scape, extreme basal portion of pedicel, A1-F4 black, rest of antenna white, club slightly darkened. Mesosoma black except almost entire tegula white; ventral 1/3-1/2 of fore coxa, entire middle coxa, ventral 2/3 of hind coxa yellow. Legs yellow; femora with apical white band, sub-apical black band; fore and middle tibiae with basal white band, sub-basal black band, hind tibia black in extreme basal portion. Metasoma yellow, with lateral, longitudinal black stripe. T2 with second longitudinal stripe ventral to main stripe. Apex of ovipositor sheaths darkened. Black color may have slight metallic tinge.

Head (fig.29) 1.25-1.4 times wider than high. Lateral ocellus nearer to eye margin than to median ocellus (OOL/LOL 0.45-0.6). Scrobal impression shallow, glabrate. Interantennal projection small. Subocular sulcus absent. Face and frons ventrally coriaceous, frons dorsally glabrate.

Antenna (fig.55) with scape 1.55-1.75 times longer than wide, with flattened ventral expansion. Ventral expansion emarginate apically. Pedicel 1.3-1.55 times longer than wide. A1 slightly shorter and narrower than A2. F1 only about 1/2 the length of F2, F2-F6 subquadrate. Club 1.9-2.1 times longer than wide.

Mesosoma with mesoscutum imbricate (fig.86). Notauli very faint, incomplete, neither meeting nor reaching posterior margin of mesoscutum. Scutellum coriaceous to imbricate. Propodeum (fig.97) very lightly sculptured with no carinae. Mesopleuron lightly sculptured, reticulate to imbricate. Sternopleural suture not reaching anterior margin of mesopleuron, mesopleural suture absent.

Wings hyaline, veins light brown. Forewing may have very faint yellow color distal of parastigma. Marginal fringe not reaching apex of wing. Basal cell (fig.135) with 2-7 setae. CC/MV 1.55-1.7, MV/PMV 1.9-2.15, MV/SV 1.85-2.15, PMV/SV 0.95-1.0.

Metasoma very lightly sculptured, coriaceous to imbricate.

MALE. Length 0.75-1.5 mm. Color similar to female except: antenna dark except pedicel white apically, face with small yellow to orange spot bordering eye margin, entire dorsum of metasoma brown. Frons with transverse furrow about halfway between torulus and median ocellus. Ventral expansion of scape not emarginate, incised in apical half. Long funicular rami on F1-F5. Funicular segments increasing slightly in length distally, rami decreasing in length distally. R5 slightly longer than F6.

DISTRIBUTION. USA: Texas; MEXICO: Nuevo Leon, Baja California Sur.

BIOLOGY AND HOSTS. Several specimens were swept from *Pithecellobium flexicaule* (Fabaceae: Mimosoidea) by C. W. Melton, who also collected several leaves with small (1.5-2.0 mm) blister type galls (fig.165). Dissection of these galls revealed dead, unemerged *T. meltoni* adults.

MATERIAL EXAMINED. Holotype ♀, USA, Texas, Hidalgo Co., 2 mi. N. Mercedes, Hoblitzelle Farm (Texas A&M), 21.v.1983, C.W. Melton, sweeping *Pithecellobium flexicaule* (USNM, point).

20♀, 35♂ paratypes. USA, Texas: as holotype and 30.v.1983 (6♀, 17♂, USNM. 1♀, 2♂: BMNH, CNC, LAS, AEI. 2♂: UCR, MLP, TAMU); Hidalgo Co., 2 mi. S. Relampago, N. bank of Rio Grande, 4.xi and 15.xii.1983, C.W. Melton, on *Pithecellobium flexicaule* (2♀, 1♂, USNM. 1♀: LAS, UCR, MLP); Cameron Co., 3 mi. W. Santa Rosa, sugar mill, 16.vi.1983, C.W. Melton, *Pithecellobium flexicaule* (1♀, TAMU); Weslaco, 10.ix.1963, J.W. Balock, from ebony (2♀, 3♂, USNM). MEXICO, Nuevo Leon: Municipio Guadalupe, Rincon de la Sierra, 11.vii.1983, G. Gordh (2♀, UCR).

Non-type material. MEXICO, Baja California Sur: Las Barracas, ~30 km. E. Santiago, 14-19.v.1984, P. DeBach, yellow pan trap (2♀, UCR).

ETYMOLOGY. Named for C. W. Melton, who collected most of the specimens of this species.

Tanaostigmodes peruviansis LaSalle, sp. n.

DIAGNOSIS. Females of *T. peruviansis* are distinguished from other species of *Tanaostigmodes* by the following characters: scape with large ventral expansion, which is emarginate apically; propodeum short, without plicae; speculum open to posterior margin of wing; posterior margin of T2-T4 without medial incision; F1 as long as or only slightly shorter than F2; basal cell with more than 20 setae; frons coriaceous, with many minute punctures; mesosoma reticulate; pedicel entirely black; head and mesosoma with some metallic coloration.

FEMALE. Length 1.55-1.7 mm. Head green, with small yellow spot bordering eye on frons, yellow spot lateral to clypeus on face, and longitudinal orange-yellow stripe bordering ventral half of scrobal impression. Antenna black except F6 and club white. Dorsum of mesosoma green medially, orange laterally. Prepectus green except anterodorsal margin orange. Mesopleuron, metapleuron, fore and hind coxae dorsally green. Entire middle coxa, fore and hind coxae ventrally, yellow. Legs yellow except for apical band on all femora and basal band on all tibiae. This band varies in width and intensity of color, from dusky to dark brown or green. Metasoma yellow with dark brown, longitudinal stripe laterally. T2 yellow with narrow brown band basally and brown band along posterior margin. T3-T6 or T7 brown dorsally.

Head 1.2-1.3 times wider than high. Lateral ocellus nearer to eye margin than to median ocellus (OOL/LOL 0.55-0.65). Scrobal impression reticulate to imbricate. Interantennal projection small, pointed apically. Subocular sulcus absent. Face reticulate, frons coriaceous with many minute punctures.

Antenna with scape 1.6-1.7 times longer than wide, with flattened ventral expansion. Ventral expansion emarginate apically. Pedicel 1.3-1.55 times longer than wide. Funicular segments quadrate or nearly so; F1, F5, F6 slightly wider than long; F2-F4 subequal in length and width. Club 1.65-1.7 times longer than wide.

Mesosoma reticulate dorsally. Propodeum reticulate to imbricate. Mesopleuron reticulate. Sternopleural suture not reaching anterior margin of mesopleuron; mesopleural suture absent.

Wings hyaline, veins light brown to yellow. Marginal fringe extending past apex of wing, not reaching postmarginal vein. Basal cell with 31-36 setae. CC/MV 2.0-2.1; MV/PMV 1.4-1.45; MV/SV 1.45-1.6; PMV/SV 1.0-1.1.

Metasoma reticulate to elongate reticulate or imbricate.

MALE. Unknown.

DISTRIBUTION. PERU.

BIOLOGY AND HOSTS. The only host record is the label on the holotype which reads "on *Acacia*" (Fabaceae: Mimosoidea).

MATERIAL EXAMINED. Holotype ♀, PERU, Chiclayo, 28.vi.1960, Young & Gonzalez, on *Acacia* (NCSU, on permanent loan to USNM, point).

1 ♀ paratype. PERU: Lima Dept., km. 46, Carretera Centra E. of Lima, 14.xi.1977, R.T. & J.C. Schuh (1 ♀, AMNH).

ETYMOLOGY. From Peru; referring to the Peruvian distribution.

Tanaostigmodes emarginatus LaSalle, sp. n.

Figures 30,56,87,136.

DIAGNOSIS. Females of *T. emarginatus* are distinguished from other species of *Tanaostigmodes* by the following characters: scape with large ventral expansion, which is emarginate apically (fig.56); propodeum short, without plicae; speculum open to posterior margin of wing (fig.136); posterior margin of T2-T4 without medial incision; F1 as long as or only slightly shorter than F2 (fig.56); basal cell with more than 20 setae (fig.136); frons reticulate, without punctures (fig.30); mesosoma reticulate (fig.87); pedicel at least white apically, may be entirely white; head and mesosoma with some metallic coloration. This species is common throughout Mexico, and ranges down into South America.

FEMALE. Length 1.05-1.95 mm. Head green to very dark green (almost black) with yellow to orange markings of variable size on the frons, face, and gena. Scape black with small white spot basally; pedicel white apically, black basally; F1 and F2 black, F3-F5 white to black, F6 and club white. Dorsum of mesosoma green to dark green medially (sometimes with a blue to violet tinge), yellow to orange laterally. Prepectus yellow with median, longitudinal brown stripe. Mesopleuron orange or yellow to black, may have metallic shine. Metapleuron, coxae, and legs yellow to orange. Hind coxa sometimes darkened dorsally; fore and middle femora with brown band or spots near apex; fore and middle tibiae with brown band or spots near base. Metasoma yellow with longitudinal brown stripe laterally; tip of ovipositor sheaths dark brown to black.

Head (fig.30) 1.15-1.2 times wider than high. Lateral ocellus nearer to eye margin than to median ocellus (OOL/LOL 0.5-0.7). Scrobal impression reticulate. Interantennal projection small, pointed apically. Subocular sulcus absent. Frons and face reticulate.

Antenna (fig.56) with scape 1.55-1.9 times longer than wide, with flattened ventral expansion. Ventral expansion emarginate apically. Pedicel 1.15-1.45 times longer than wide. Anelli subequal in size. F1 from slightly wider than long to subequal in length and width; F2-F4 subequal in length and width; F5-F6 slightly wider than long. Club 1.7-2.25 times longer than wide.

Mesosoma reticulate dorsally (fig.87). Propodeum reticulate. Mesopleuron reticulate. Sternopleural suture not reaching anterior margin of mesopleuron, connected to mesopleural suture. Metapleuron small, widening posteriorly.

Wings hyaline, veins yellow to light brown. Forewing with marginal fringe extending past apex of wing, sometimes reaching postmarginal vein. Basal cell (fig.136) with 21-47 setae. CC/MV 1.9-2.4, MV/PMV 1.3-1.7, MV/SV 1.3-1.85, PMV/SV 0.95-1.1.

Metasoma reticulate to elongate reticulate or imbricate.

MALE. Length 1.1-1.25 mm. Color similar to female except: dorsum of mesosoma completely dark green, mesopleuron dark green, dorsum of metasoma brown; scape white in basal half, black apically, funicular segments dark. Ventral expansion of scape not emarginate, incised in apical half. Long funicular rami on F1-F4. F1-F5 increasing in length distally, F6 about half the length of F5. Frons with transverse furrow halfway between torulus and median ocellus.

VARIATION. The color of the mesopleuron is usually orange to yellow, however there is extensive variation and the color can range to entirely black (and may have some metallic shine). Female specimens from South America have only F1 and F2 black, with the rest of the funicle white; Mexican females always have F3, usually F4, and sometimes F5 dusky to black. In the single specimen from Peru metasomal tergites T3-T7 are dark brown dorsally. In all other specimens the metasoma is yellow dorsally.

DISTRIBUTION. MEXICO: Sinaloa, Morelos, Puebla, Michoacan, Guerrero, Veracruz, Colima; PERU; URUGUAY.

BIOLOGY AND HOSTS. The only host information is the label on the specimen from Peru which reads *Malachra capitata* (Malvaceae). This record may be mistaken.

MATERIAL EXAMINED. Holotype ♀, MEXICO, Sinaloa, 11 mi. N. La Concha, nr. microondas sta. La Muralla 2, 25.x.1982, J.T. Huber (USNM, point).

21♀, 16♂ paratypes. MEXICO, Sinaloa: 12 mi. N. Mazatlan, 25.x.1982, J.T. Huber (1♂, UCR); MEXICO, Morelos: Amatlan (West), 14 km. N.

Yautepec, 29.x.1982, J.T. Huber (1♀, UCR); MEXICO, Veracruz: 3 mi. N. Cardel by Rio Actopan, 31.x.1982, A. Gonzalez & J.T. Huber (2♀, UCR); MEXICO, Puebla: 15 km. W. Izucar de Matamoros, Hwy. 140, 27.vi.1981, J. LaSalle (1♀, LAS; 3♂, USNM); MEXICO, Colima: 7 mi. SSW. Colima, Hwy 110, 9.vii.1984, J.B. Woolley (1♀, USNM); MEXICO, Michoacan: 49 mi. SE. Aquila, 13.vii.1984, J.B. Woolley (3♀, 3♂, USNM); MEXICO, Guerrero: 6 mi. NE. Tixtla, 16.vii.1984, J.B. Woolley (1♂, USNM); 15 mi. W. Chichihualco, ~5000', 15.vii.1984, J.B. Woolley (3♀, 1♂, USNM. 1♀, 1♂: BMNH, CNC, AEI); 4 mi. W. Chilpancingo, ~4000', 15.vii.1984, J.B. Woolley (5♀, 2♂, TAMU. 1♀, 1♂: LAS, MLP).

Non-type material. PERU: Lambayque, 29.xi.1966, *Malachra capitata* (1♀, USNM). URUGUAY: Montevideo, So. Amer. Paras. Lab, vii-viii.1944, No. 1166-9, Berry (4♀, USNM).

ETYMOLOGY. The Latin *emarginatus*, meaning notched at the apex; referring to the distinct shape of the scape.

CARINATUS Group

Females of the Carinatus Group are distinguished by the following combination of characters: scape with large, flattened, ventral expansion (less than 2.0 times longer than wide), which is emarginate at apex (fig.57); interantennal projection absent (fig.43); posterior margin of T2-T4 with medial incision; propodeum somewhat lengthened, with strong plicae (fig.111); speculum separated from posterior margin of wing by more setae (on ventral surface of wing) than a single line representing subcubital vein (fig.137); subocular sulcus present. Males (known only for *fernandesi*) with 4 long funicular rami; frons with transverse furrow at level halfway between torulus and median ocellus.

There are two species included in this group, *carinatus* and *fernandesi*.

Tanaostigmodes carinatus LaSalle, sp. n.

Figure 150.

DIAGNOSIS. Females of *T. carinatus* are distinguished from other species of *Tanaostigmodes* by the following characters: scape with large ventral expansion, which is emarginate apically; propodeum somewhat lengthened, with strong plicae; speculum separated from posterior margin of wing by more setae (on ventral surface of the wing) than a single line representing subcubital vein; posterior margin of T2-T4 with medial incision; interantennal projection absent; hind femur without tooth on ventral margin (fig.150); head and body black; scutellum coriaceous anteriorly, glabrate posteriorly.

FEMALE. Length 1.85 mm. Head generally dark brown to black. Lower frons, face and gena light brown to honey yellow except brown transverse stripe extending from eye margin almost to torulus. Scape light brown to honey yellow, ventral margin brown. Funicular segments brown, F5 and F6 dorsally and club pale yellow. Mesosoma and metasoma dark brown to black except prepectus brown.

Head 1.25 times wider than high. Lateral ocellus nearer to median ocellus than to eye margin (OOL/LOL 1.3). Scrobal impression small, glabrate ventrally. Interantennal projection absent. Subocular sulcus complete. Frons transversely strigate to carinate. Face strigulate to coriaceous.

Antenna with scape 1.4 times longer than wide, with flattened ventral expansion. Ventral expansion emarginate apically. Pedicel 1.55 times longer than wide. A1 shorter and slightly narrower than A2. F1 slightly longer than wide; funicular segments decreasing in length distally; F6 subquadrate. Club 1.25 times longer than wide.

Mesosoma coriaceous dorsally, except scutellum with transverse glabrate band in posterior half. Propodeum glabrate with strong plica, callus coriaceous with complete longitudinal carina lateral to spiracle. Mesopleuron glabrate posteriorly, strigulate anteriorly. Sternopleural suture not reaching anterior margin of mesopleuron, connected to mesopleural suture. Hind femur without tooth on ventral margin (fig.150).

Wings slightly yellowed, veins light brown. Forewing with marginal fringe extending to slightly past apex of wing. Speculum separated from posterior margin of wing by more setae (on ventral surface of the wing) than a single line representing subcubital vein. Basal cell with 31-35 setae. CC/MV 1.9, MV/PMV 1.9, MV/SV 2.1, PMV/SV 1.1.

Metasoma reticulate dorsally. T2-T5 with medial line. T2-T5 with medial incision on posterior margin. Ovipositor slightly exserted.

MALE. Unknown.

DISTRIBUTION. BRAZIL: Minas Gerais.

BIOLOGY AND HOSTS. Unknown.

MATERIAL EXAMINED. Holotype ♀, BRAZIL, Minas Gerais, Pedra Azul, xi.1972, Seabra & Oliveira (CNC, point).

This species known only from the holotype.

ETYMOLOGY. From the Latin *carinate*, meaning having carinae; referring to the distinct lateral carina on the propodeum.

***Tanaostigmodes fernandesi* LaSalle, sp. n.**

Figures 43,57,111,137,149.

DIAGNOSIS. Females of *T. fernandesi* are distinguished from other species of *Tanaostigmodes* by the following characters: scape with large

ventral expansion, which is emarginate apically (fig.57); propodeum somewhat lengthened, with strong plicae (fig.111); speculum separated from posterior margin of wing by more setae (on ventral surface of the wing) than a single line representing subcubital vein (fig.137); posterior margin of T2-T4 with medial incision; interantennal projection absent (fig.43); hind femur with distinct tooth on ventral margin near apex (fig.149); head and body honey yellow; scutellum entirely coriaceous.

FEMALE. Length 2.1-3.5 mm. Color honey yellow, except head with dark brown spot in ventral portion of scrobal impression; transverse brown stripe between eye margin and torulus; small brown spot bordering eye margin just dorsal to transverse stripe. Ventral margin of scape brown; F5, F6 and club pale yellow to white. T6 pale yellow to white posteriorly.

Head (fig.43) 1.45-1.65 times wider than high. Lateral ocellus nearer to median ocellus than to eye margin (OOL/LOL 1.9-2.1). Scrobal impression glabrate. Interantennal projection absent. Subocular sulcus complete. Face and frons lightly coriaceous to glabrate.

Antenna (fig.57) with scape 1.35-1.55 times longer than wide, with flattened ventral expansion. Ventral expansion emarginate apically. Pedicel 1.5-1.7 times longer than wide. A1 slightly shorter and narrower than A2. F1 longer than wide; funicular segments decreasing in length distally; F6 subquadrate. Club 1.35-1.75 times longer than wide.

Mesosoma coriaceous dorsally. Propodeum glabrate, with strong plicae (fig.111). Mesopleuron glabrate. Sternopleural suture not reaching anterior margin of mesopleuron, connected to mesopleural suture. Hind femur with a definite subapical tooth on ventral surface (fig.149).

Wings hyaline, veins light brown. Forewing with marginal fringe extending past apex of wing, not reaching postmarginal vein. Speculum separated from posterior margin of wing by more setae (on ventral surface of the wing) than a single line representing subcubital vein (fig.137). Basal cell with 28-49 setae. CC/MV 2.05-2.3, MV/PMV 1.4-1.8, MV/SV 1.85-2.05, PMV/SV 1.1-1.3.

Metasoma coriaceous to lightly reticulate. T2-T5 with median line, T6 with median line anteriorly. T2-T5 with medial incision on posterior margin. Ovipositor slightly exserted.

MALE. Length 1.5-2.7 mm. Color similar to female except: entire scrobal impression dark brown. Frons with transverse furrow at level halfway between toruli and median ocellus. Scape with ventral expansion in apical half only. F1-F4 with long rami, each ramus slightly shorter than preceding one; each funicular segment slightly longer than preceding one to F5, F6 slightly shorter than F5.

DISTRIBUTION. BRAZIL: Minas Gerais.

BIOLOGY AND HOSTS. Fernandes, et.al. (in press) reared this species as an inquiline from galls of *Anadiplosis* sp (Cecidomyiidae) on *Machaerium aculeatum* (Fabaceae: Faboidea) in Brazil. This is the only record of inquilinism for New World Tanaostigmatidae.

MATERIAL EXAMINED. Holotype ♀, BRAZIL, Minas Gerais, Belo Horizonte, UFMG Campus, 15.viii.1984, G.W. Fernandes, from gall on *Machaerium aculeatum* (USNM, point).

5♀, 4♂ paratypes. BRAZIL, Minas Gerais: as holotype (2♀, 2♂, USNM. 1♀, 1♂: BMNH, MLP); Pedra Azul, xi.1972, Seabra & Oliveira, (1♀, CNC).

ETYMOLOGY. Named for G. Wilson A. Fernandes, who collected the holotype and most of the paratypes, and discovered the biology of this species.

DILATUS Group

Females of the Dilatus Group are distinguished by the following combination of characters: scape about 2 times longer than wide, with large, flattened, ventral expansion (figs.59-60); propodeum with strong plicae and transverse carina at posterior margin of propodeum connecting plicae (fig.112); scutellum coriaceous; subocular sulcus complete. Males unknown.

There are two included species, *dilatus* and *latiscapus*.

Tanaostigmodes dilatus LaSalle, sp. n.

Figure 59.

DIAGNOSIS. Females of *T. dilatus* are distinguished from other species of *Tanaostigmodes* by the following characters: scape with large ventral expansion, about 2 times longer than wide, which is slightly incised in apical half (fig.59); propodeum with strong plicae, and carina along posterior margin of propodeum which connects them; mesopleuron glabrate; scutellum coriaceous; face, frons, and pleural region of mesosoma predominantly light brown.

FEMALE. Length 1.75 mm. This specimen was in alcohol for 8 years and some color leaching occurred. The extent of leaching is hard to assess, and the original hue and intensity of color can no longer be determined. The pattern of color is described, using the terms light and dark. Dark probably refers to dark brown to black, light may be light brown to yellow or white. Head generally light; vertex, occiput dorsally, scrobal impression and ventral spot on gena bordering oral fossa dark. Scape dark except for extreme basal and apical portions; funicle dark, club light. Dorsum of mesosoma dark except pronotum laterally, mesoscutum laterally, axilla and propodeum light. Prepectus light, tegula light anteriorly, dark posteriorly. Pleural region light. Metasoma dark dorsally and laterally, with longitudinal light stripe laterally; light ventrally. Ovipositor sheaths light, apex dark.

Head 1.3 times wider than high. Lateral ocellus nearer to median ocellus than to eye margin (OOL/LOL 1.2). Scrobal impression glabrate.

Interantennal projection very small. Subocular sulcus complete. Frons and face very lightly coriaceous.

Antenna (fig.59) with scape 2.0 times longer than wide, with flattened ventral expansion. Ventral expansion widest medially, slightly incised in apical half. Pedicel 1.6 times longer than wide. A1 subequal in length to, slightly narrower than A2. F1-F5 slightly longer than wide, F6 subquadrate. Club 2.2 times longer than wide.

Mesosoma with mesoscutum coriaceous to imbricate; scutellum coriaceous. Propodeum glabrate with strong plica and transverse carina at posterior margin of propodeum connecting plica. Mesopleuron glabrate. Sternopleural suture not reaching anterior margin of mesopleuron, not connected to mesopleural suture.

Wings hyaline, veins light brown. Forewing with marginal fringe extending to postmarginal vein. Basal cell with 14-15 setae. CC/MV 1.45, MV/PMV 1.55, MV/SV 2.05, PMV/SV 1.3.

Metasoma lightly sculptured, reticulate to imbricate to coriaceous. T2-T5 with very small medial incision on posterior margin.

MALE. Unknown.

DISTRIBUTION. BRAZIL: Pernambuco.

BIOLOGY AND HOSTS. Unknown.

MATERIAL EXAMINED. Holotype ♀, BRAZIL, Pernambuco, Caruaru, iv.1972, M. Alvarenga (CNC, point).

This species known only from the holotype.

ETYMOLOGY. The Latin *dilatatus*, meaning expanded; referring to the flattened ventral expansion of the scape.

***Tanaostigmodes latiscapus* LaSalle, sp. n.**

Figures 60,112.

DIAGNOSIS. Females of *T. latiscapus* are distinguished from other species of *Tanaostigmodes* by the following characters: scape with large ventral expansion, about 2 times longer than wide, which is uniformly rounded and not excised in apical half (fig.60); propodeum with strong plicae, and carina along posterior margin of propodeum which connects them (fig.112); mesopleuron glabrate; scutellum coriaceous; face, frons, and pleural region of mesosoma predominantly dark brown; ventral expansion of scape uniformly rounded, not incised in apical half.

FEMALE. Length 1.8-2.2 mm. Head dark brown with light brown area lateral to clypeus. This area may be small and poorly distinguished. Light brown to yellow stripe may be present on frons at inner eye margin. Antenna dark brown except apex of scape light brown, F6 dusky yellow, club yellow. Mesosoma dark brown except mesoscutum and axilla

laterally, prepectus dorsally, tegula light brown. Fore and hind coxae apically, entire middle coxa, yellow; fore and middle coxae basally, dark brown. Legs yellow; except fore femur dorsally, middle and hind femora except basally and apically, dark brown. Metasoma dark brown; T8, ovipositor sheaths except apex, light brown to yellow.

Head 1.25-1.35 times wider than high. Lateral ocellus about equidistant from eye margin and median ocellus (OOL/LOL 0.95-1.15). Scrobal impression glabrate. Interantennal projection small. Subocular sulcus complete. Frons and face coriaceous to lightly imbricate.

Antenna (fig.60) with scape 1.95-2.1 times longer than wide, with flattened ventral expansion. Pedicel 1.4-1.7 times longer than wide. A1 about as long as, slightly narrower than, A2. F1 slightly longer than wide; funicular segments decreasing in length distally; F6 subquadrate. Club 1.55-1.95 times longer than wide.

Mesosoma with mesoscutum coriaceous to imbricate; scutellum coriaceous. Propodeum glabrate medially with strong plicae and strong transverse carina at posterior margin of propodeum connecting plicae (fig.112); callus coriaceous. Mesopleuron glabrate posteriorly, lightly strigulate anteriorly. Sternopleural suture not reaching anterior margin of mesopleuron, connected to mesopleural suture.

Wings hyaline, veins light brown. Forewing with marginal fringe extending to postmarginal vein. Basal cell with 20-28 setae. CC/MV 1.55-1.95, MV/PMV 1.6-1.9, MV/SV 1.9-2.25, PMV/SV 1.1-1.35.

Metasoma lightly reticulate, glabrate anteriorly on T2. T2 with medial line, T3-T5 folded medially, without defined line. T2-T5 with slight medial incision on posterior margin.

MALE. Unknown.

DISTRIBUTION. BRAZIL: Santa Catarina.

BIOLOGY AND HOSTS. Unknown.

MATERIAL EXAMINED. Holotype ♀, BRAZIL, Santa Catarina, Nova Teutonia, 20.x.1949, F. Plaumann, B.M. 1957-341 (BMNH, card).

7♀ paratypes. As holotype (5♀, BMNH. 1♀: USNM, CNC).

ETYMOLOGY. From the Latin *latus*, meaning wide, and *scapus*; referring to the wide, flattened ventral expansion of the scape.

BASILARIS Group

Females of the Basilaris Group are distinguished by the following combination of characters: scape less than 2.5 times longer than wide, with large, flattened, ventral expansion (fig.58); propodeum without plicae (figs.99-100); basal cell with less than 5 setae (fig.138); subocular sulcus absent, or present but very small and only represented just ventral to eye.

Male funicular segments dorsally expanded, without rami; frons with transverse furrow at level halfway between torulus and median ocellus.

There are two included species, *basilaris* and *triplaris*. These are the only two tanaostigmatids known from host plants within the Polygonaceae (*Triplaris*).

***Tanaostigmodes basilaris* LaSalle, sp. n.**

Figures 11,100.

DIAGNOSIS. Females of *T. basilaris* are distinguished from other species of *Tanaostigmodes* by the following characters: scape with large ventral expansion, less than 2.5 times longer than wide; basal cell with less than 5 setae; subocular sulcus absent, or present and very short; propodeum without transverse carina medial to spiracle (fig.100); dorsum of mesosoma predominantly reticulate (fig.11); scape dark brown with yellow marking near apex.

FEMALE. Length 2.45-2.85 mm. Face and frons ventrally yellow; frons dorsally and scrobal impression orange. Epistomal suture, ventral margin of clypeus brown. A small brown spot anterior to lateral ocellus and two small brown spots anterior to median ocellus may be present. Antenna yellow to light brown; margin of ventral expansion of scape and pedicel basally brown; F1-F3 somewhat dusky ventrally. Mesosoma and legs orange to yellow; metanotum and propodeum with some lateral dusiness, tegula very light yellow to white with posterior margin darkened. Metasoma dark brown dorsally, brown laterally and ventrally, with longitudinal light yellow stripe laterally. T8 yellow posteriorly except apex dark brown.

Head 1.2-1.25 times wider than high. Lateral ocellus slightly nearer to eye than to median ocellus (OOL/LOL 0.7-0.85). Scrobal impression glabrate. Interantennal projection small, with sharp median carina dorsally. Subocular sulcus absent, indicated only by slight depression near ventral margin of eye. Frons and face lightly imbricate to coriaceous, the sculpture sometimes elongated. Face with scattered, minute, setiferous punctures.

Antenna with scape 2.25-2.35 times longer than wide, with flattened ventral expansion. Pedicel 1.2-1.45 times longer than wide. A1 subequal in length to, slightly narrower than, A2. F1 slightly longer than wide; funicular segments decreasing in length distally, F6 subquadrate. Club 1.85-2.0 times longer than wide.

Mesosoma (fig.11) reticulate to imbricate dorsally, with numerous light colored setae. Propodeum imbricate to reticulate, without transverse carina medial to spiracle (fig.100). Mesopleuron lightly sculptured, reticulate to imbricate. Sternopleural suture connected to mesopleural suture.

Wings hyaline, veins very light brown to yellow. Forewing with marginal fringe extending to apex of wing. Basal cell with 0-3 setae. CC/MV 1.8-2.1, MV/PMV 1.8-2.5, MV/SV 1.7-2.1, PMV/SV 0.8-0.95.

Metasoma lightly reticulate to imbricate. T2-T4, sometimes T5, with medial line and medial incision on posterior margin of tergum.

MALE. Length 2.15-2.4 mm. Head dark brown, frons ventrally, face and gena light yellow to white. Scape dark brown, ventral expansion light yellow to white ventrally, brown dorsally. Pedicel brown, white apically. Funicular segments and club missing, except for F1 on one specimen which is brown. Dorsum of mesosoma brown, pleuron orange to yellow. Metasoma colored as in female. F1 with dorsal projection [F2-club missing]. Frons with transverse suture halfway between torulus and median ocellus. Frons dorsally with minute, setiferous punctures.

DISTRIBUTION. CANAL ZONE.

BIOLOGY AND HOSTS. Found with seeds of *Triplaris*, and on *Triplaris cumingiana* (Polygonaceae).

MATERIAL EXAMINED. Holotype ♀, CANAL ZONE, 16.v.1939, Smith, with *Triplaris* seed, Lot No. 39-9794 (USNM, point).

8♀, 2♂ paratypes. CANAL ZONE: as holotype (4♀, 2♂, USNM. 1♀: BMNH, CNC); Balboa Heights, 24.v.1923, H.Y. Gouldman, on *Triplaris cumingiana*, F.H.B. No. 46251 (2♀, USNM).

ETYMOLOGY. The Latin *basilaris*, meaning concerning the base; referring to the basal cell of the forewing, with its reduced number of setae.

***Tanaostigmodes triplaris* LaSalle, sp. n.**

Figures 58, 99, 138, 160.

DIAGNOSIS. Females of *T. triplaris* are distinguished from other species of *Tanaostigmodes* by the following characters: scape with large ventral expansion, less than 2 times longer than wide (fig. 58); basal cell with less than 5 setae (fig. 138); subocular sulcus absent, or present and very short; propodeum with strong transverse carina medial to spiracle (fig. 99); dorsum of mesosoma coriaceous; scape light brown.

FEMALE. Length 2.9-3.5 mm. Head orange to yellow, darker dorsally than ventrally. Vertex between ocelli, and occiput dorsally black. Anterior tentorial pit, epistomal suture ventral to anterior tentorial pit, and ventral margin of clypeus black. Scape black with yellow area dorsoapically, complete longitudinal yellow line along dorsal margin of ventral expansion. Pedicel black with small yellow area apically. F1-F5 dusky ventrally, yellow dorsally, F6 yellow. [Club missing.] Dorsum of mesosoma black, mesoscutum and axilla orange laterally. Tegula and prepectus anterodorsally white, prepectus and mesopleuron orange, metapleuron yellow. Legs and coxae yellow to orange, and brown. Metasoma orange brown to brown, T2 yellow medially, ovipositor sheaths yellow.

Head 1.45-1.55 times wider than high. Lateral ocellus nearer to median ocellus than to eye margin (OOL/LOL 1.35-1.5). Scrobal impression glabrate. Interantennal projection very small. Subocular sulcus absent, indicated only by slight depression near ventral margin of eye. Frons and face mainly lightly imbricate to coriaceous, with some areas of light reticulation. Face with a few scattered, minute, setiferous punctures.

Antenna (fig.58) with scape 1.6-1.85 times longer than wide, with flattened ventral expansion. Pedicel 1.2-1.5 times longer than wide. A1 slightly shorter and narrower than A2. All funicular segments slightly longer than wide. [Club missing.]

Mesosoma coriaceous dorsally, with numerous white setae. Propodeum glabrate medially, with distinct transverse carina medial to spiracle (fig.99). Mesopleuron lightly sculptured, reticulate to imbricate. Sternopleural suture not reaching anterior margin of mesopleuron, connected to mesopleural suture.

Wings hyaline, veins light brown. Forewing with marginal fringe extending to apex of wing. Basal cell (fig.138) with 1-4 setae. CC/MV 1.85-2.15, MV/PMV 1.8-2.1, MV/SV 1.4-1.6, PMV/SV 0.7-0.95.

Metasoma (fig.160) lightly reticulate dorsally. T2-T5 without defined medial line, but with terga folded medially.

MALE. Length 2.05-2.25 mm. Color similar to female except: head dark brown except orange to yellow transverse line across frons overlapping transverse suture, lower face yellow; scape dark brown without yellow markings; funicular segments dusky brown, club light yellow. Mesopleuron brown; metasoma dark brown, T2 light brown anteriorly. F1-F5 with dorsal projection, these projections shorter distally. Frons with transverse furrow halfway between the torulus and the median ocellus.

DISTRIBUTION. VENEZUELA.

BIOLOGY AND HOSTS. Reared from galls of *Triplaris* (Polygonaceae).

MATERIAL EXAMINED. Holotype ♀, VENEZUELA, El Valle, 10.ii.1943, C.H. Ballou, *Triplaris* gall, No. BBE, Lot No. 43-20941 (USNM, point).

8♀, 8♂ paratypes. As holotype (5♀, 5♂, USNM. 1♀, 1♂: BMNH, CNC, LAS).

ETYMOLOGY. From *Triplaris*; referring to the generic name of the host plant.

ANELLARIUS Group

Females of the Anellarius Group are distinguished by the following combination of characters: first funicular segment reduced to the size of an anellus, making antennal formula appear to be 11353 (fig.53)(a character unique to this group); frons with transverse furrow halfway between torulus and median ocellus (fig.41-42); interantennal projection absent to

very small; scape 2.0-2.5 times longer than wide, with flattened ventral expansion (fig.53); ventral expansion from emarginate apically to incised in apical half. Males (only known for *anellarius*) with 4 long funicular rami; frons with transverse furrow halfway between torulus and median ocellus.

Two species are included in this group, *anellarius* and *sulcatus*.

***Tanaostigmodes anellarius* LaSalle, sp. n.**

Figures 41,53,145.

DIAGNOSIS. Females of *T. anellarius* are distinguished from other species of *Tanaostigmodes* by the following characters: F1 reduced to the size of an anellus, making antennal formula appear to be 11353 (fig.53); frons with transverse furrow halfway between torulus and median ocellus (fig.41); frons without transverse furrow just ventral to median ocellus, and without longitudinal furrows bordering eye margin; forewing with marginal postmarginal veins not swollen at junction with stigmal vein (fig.145).

FEMALE. Length 1.15-1.2 mm. Occiput, vertex, and frons dorsally brown, face and frons ventrally yellow to yellow-orange with brown markings as follows: two transverse stripes on frons ventrally; face medially from torulus to clypeal margin; spot near mouth margin. Scrobal impression medially dark brown. Antenna brown, except scape apically, pedicel apically, anelli, and apical club segment white. Dorsum of mesosoma brown, becoming orange laterally; tegula light yellow with brown margin, pleural and sternal regions orange-yellow to yellow; legs yellow, with some dusky brown coloration. Metasoma orange dorsally, brown ventrally, with the posterior margins of terga slightly darkened.

Head (fig.41) 1.3-1.4 times wider than high. Lateral ocellus nearer to eye margin than to median ocellus (LOL/OOL 1.3-1.35). Frons with transverse suture halfway between median ocellus and torulus. Scrobal impression reticulate. Subocular sulcus absent. Face and frons reticulate.

Antenna (fig.53) with scape 2.0-2.2 times longer than wide, with flattened ventral expansion. Ventral expansion ranging from emarginate apically to incised in apical half. A1 subequal in length and width with A2. F1 much reduced, only slightly larger than an anellus and distinctly less than half the length of F2. F2-F6 from subequal in length and width to slightly longer than wide. Club 2.0-2.25 times longer than wide.

Mesosoma reticulate dorsally. Propodeum reticulate. Mesopleuron reticulate. Sternopleural suture not reaching anterior margin of mesopleuron, not or only faintly connected to mesopleural suture.

Wings hyaline, veins light brown. Forewing with marginal fringe extending to apex of postmarginal vein. Basal cell with 30-45 setae. Marginal and postmarginal veins not swollen at junction of stigmal vein (fig.145). CC/MV 2.2-2.7, MV/PMV 1.4-1.85, MV/SV 1.3-1.65, PMV/SV 0.85-1.05.

Metasoma dorsally elongate-reticulate medially, reticulate laterally. T2-T5 with median line.

MALE. Length 0.9-0.95 mm. Coloration as in female. Antenna with rami on F1-F4, each ramus shorter than preceding one. R4 slightly longer than F5. Each funicular segment from F1-F4 longer than preceding one; F4 and F5 subequal in length; F6 noticeably shorter than F5.

DISTRIBUTION. MEXICO: Michoacan, Colima; BAHAMA ISLANDS.

BIOLOGY AND HOSTS. Unknown.

MATERIAL EXAMINED. Holotype ♀, MEXICO, Michoacan, 3 km. N. Capirio, 12.vii.1981, J. LaSalle (USNM, point).

9♀, 4♂ paratypes. MEXICO, Michoacan: as holotype (2♀, 2♂, USNM. 1♀, 1♂ LAS); 10 km. N. Nueva Italia, 12.vii.1981, J. LaSalle (1♀, BMNH). MEXICO, Colima: 7 mi. SSW. Colima, Hwy 110, 9.vii.1984, J.B. Woolley (1♀, TAMU). BAHAMA ISLANDS: Exuma, Simon's Point, 15-20.v.1986, T.L. McCabe (2♀, 1♂, USNM. 1♀: CNC, AEI).

ETYMOLOGY. A diminutive form of the Latin *anellus*; referring to the anelliform first funicular segment.

***Tanaostigmodes sulcatus* LaSalle, sp. n.**

Figures 42, 146.

DIAGNOSIS. Females of *T. sulcatus* are distinguished from other species of *Tanaostigmodes* by the following characters: F1 reduced to the size of an anellus, making antennal formula appear to be 11353; frons with transverse furrow halfway between torulus and median ocellus and with transverse furrow just ventral to median ocellus, and with longitudinal furrow bordering eye margin which connects the two transverse furrows (fig.42); forewing with marginal and postmarginal veins swollen at junction with stigmal vein (fig.146).

FEMALE. Length 1.0 mm. Occiput and vertex brown; face and frons brown with orange markings as follows: frons with transverse stripe confluent with each of the two transverse furrows, longitudinal stripe bordering eye margin and scrobal impression; face with spot bordering clypeus and spot at ventral eye margin. Antenna brown, except scape apically, pedicel apically, anelli, and apical club segment white. Mesosoma dark brown dorsally, brown on pleural region except for orange spot dorsally on mesopleuron; sterna, coxae and legs yellow with some brown coloration. Metasoma orange-brown to brown, the posterior margin of each tergum slightly darker than the rest of the tergum.

Head (fig.42) 1.2 times wider than high. Lateral ocellus closer to eye margin than to median ocellus (LOL/OOL 2.0). Frons with one transverse furrow halfway between torulus and median ocellus; another transverse furrow just ventral of median ocellus; longitudinal furrow bordering eye margin connecting these furrows. Scrobal impression reticulate. Subocular sulcus absent. Face and frons reticulate.

Antenna with scape 2.5 times longer than wide with flattened ventral expansion. Ventral expansion incised in apical half. A1 subequal in length and width to A2. F1 much reduced, only slightly larger than an anellus and distinctly less than half the length of F2; F2-F6 subquadrate. Club 1.6 times longer than wide.

Mesosoma reticulate dorsally. Propodeum reticulate. Mesopleuron faintly reticulate. Sternopleural suture not reaching anterior margin of mesopleuron, connected to mesopleural suture.

Wings hyaline, veins light brown. Forewing with marginal fringe extending to apex of postmarginal vein. Basal cell with 15 setae. Marginal and postmarginal veins swollen at junction with stigmal vein (fig.146). CC/MV 1.85, MV/PMV 2.1, MV/SV 2.25, PMV/SV 1.2.

Metasoma dorsally elongate-reticulate medially, reticulate laterally. T2-T4 with medial line.

MALE. Unknown

DISTRIBUTION. MEXICO, Chiapas.

BIOLOGY AND HOSTS. Unknown.

MATERIAL EXAMINED. Holotype ♀, MEXICO, Chiapas, 30 km. SW Ocozocoautla, 30.vi.1981, J. LaSalle (USNM, point; left wings and left antenna on slide in balsam).

This species known only from the holotype.

ETYMOLOGY. The Latin *sulcatus*, meaning furrowed; referring to the furrows on the frons.

MINUTUS Group

Females of the Minutus Group are distinguished by the following combination of characters: frons with transverse furrow halfway between torulus and median ocellus (fig.35); speculum separated from posterior margin of wing by more setae than a single line representing subcubital vein (figs.133-134); F1 as long as or only slightly shorter than F2 (fig.61); notauli complete; interantennal projection absent or very small; scape 2.5-3.0 times longer than wide, with flattened, ventral expansion (fig.61); dorsum of mesosoma somewhat flattened; species small, less than 1.7 mm in length. Males have funicular segments with dorsal projections, without rami; frons with transverse furrow at level halfway between torulus and median ocellus.

There are two species in this group, *pithecellobiae* and *minutus*. Both species are associated with plants in the genus *Pithecellobium* (Fabaceae; Mimosoidea).

Tanaostigmodes pithecellobiae LaSalle, sp. n.

Figures 35,61,85,98,106,134.

DIAGNOSIS. Females of *T. pithecellobiae* are distinguished from other species of *Tanaostigmodes* by the following characters: frons with transverse furrow halfway between torulus and median ocellus (fig.35); F1 as long as or only slightly shorter than F2 (fig.61); speculum separated from posterior margin of wing by more setae than a single row representing subcubital vein (fig.134); notauli complete; basal cell with 65-100 setae (fig.134); body uniformly light brown to yellow except for dark brown scrobal impression.

FEMALE. Length 1.0-1.65 mm. Head and body light brown to yellow. Scrobal impression dark brown. Scape slightly darkened dorsally; funicle and club dusky.

Head (fig.35) 1.25-1.4 times wider than high. Lateral ocellus about equidistant from median ocellus and eye margin (OOL/LOL 0.8-1.2). Scrobal impression glabrate to faintly strigulate. Frons with transverse furrow halfway between toruli and median ocellus. Interantennal projection absent or very small. Subocular sulcus incomplete. Sculpture on head faint, reticulate to imbricate.

Antenna (fig.61) with scape 2.55-2.85 times longer than wide, with flattened ventral expansion. Pedicel 1.1-1.4 times longer than wide. A1 and A2 subequal in length and width. F1 longer than wide; funicular segments decreasing in length distally; F6 subequal in length and width. Club 1.9-2.5 times longer than wide.

Mesosoma dorsally reticulate to imbricate; slightly flattened so that mesoscutum (fig.85), scutellum and axillae all lie in approximately the same plane. Scutellum usually about equal in length and width, rarely slightly longer than wide. Propodeum (fig.98) very faintly sculptured. Mesopleuron (fig.106) glabrate. Sternopleural suture not reaching anterior margin of mesopleuron, not connected to short mesopleural suture. Mesopleural suture very faint to absent.

Wings hyaline, veins light brown to yellow. Forewing with marginal fringe extending to postmarginal vein. Basal cell (fig.134) with 65-100 setae. Speculum separated from posterior margin of wing by more setae on dorsal surface of wing than a single line representing the subcubital vein. CC/MV 2.2-2.65, MV/PMV 1.15-1.35, MV/SV 1.1-1.3, PMV/SV 0.9-1.1.

Metasoma imbricate to reticulate.

MALE. Length 0.95-1.4 mm. Coloration as in female. Funicular segments subequal in length, each with dorsal projection; projections no taller than the length of funicular segment.

DISTRIBUTION. USA: Florida.

BIOLOGY AND HOSTS. Reared from small, blister type galls on the leaves of *Pithecellobium guadalupense* and *P. unguis-cati* (Fabaceae; Mimosoidea).

MATERIAL EXAMINED. Holotype ♀, USA, Florida, Monroe Co., Marathon, 28.viii.1973, W.E. Wyles, leaf gall on *Pithecellobium guadalupense* (USNM, point).

87♀, 26♂ paratypes. USA, Florida: as holotype (27♀, 4♂, USNM. 2♀, 1♂: BMNH, CNC, LAS, UCR, AEI, MLP, TAMU, FSCA, ANIC, QMB, PPRI, ZIL); Monroe Co., Key West, iv.1887, (1♀, USNM); Monroe Co., 28.viii.1973, leaf gall on *Pithecellobium unguis-cati* (1♀, 1♂, USNM); Monroe Co., Key Largo, 15.vi.1961, F.C. Craighead, gall on *Eugenia axillaris* [Myrtaceae] (1♀, USNM); Monroe Co., Key Largo, W.E. Wyles & R. Clark, *Pithecellobium guadalupense* (1♀, 1♂, FSCA); Monroe Co., Summerland Key, 27.vi.1973, W.E. Wyles & H. Burnett, *Pithecellobium unguis-cati* (2♀, FSCA); Monroe Co., Grassy Key, 22.iii.1977, E.E. Grissell, *Pithecellobium guadalupense* (2♀, 1♂, FSCA); Monroe Co., Long Key, 22.iii.1977, E.E. Grissell, *Pithecellobium guadalupense* (3♀, 1♂, FSCA); Monroe Co., Key Largo Key, North End, 21.iii.1977, E.E. Grissell, *Pithecellobium guadalupense* (12♀, 2♂, USNM; 12♀, 2♂, FSCA); Big Pine [presumably Big Pine Key, Monroe Co.], 6.iii, Schwarz (1♂, USNM); Greynolds Pk., 21.ii.1967, W.T. Rowan, gall on *Pithecellobium unguis-cati* (1♀, 1♂, USNM).

ETYMOLOGY. From *Pithecellobium*; referring to the generic name of the host plant.

***Tanaostigmodes minutus* LaSalle, sp. n.**

Figure 133.

DIAGNOSIS. Females of *T. minutus* are distinguished from other species of *Tanaostigmodes* by the following characters: frons with transverse furrow halfway between torulus and median ocellus; F1 as long as or only slightly shorter than F2; speculum separated from posterior margin of wing by more setae than a single row representing subcubital vein (fig.133); notauli complete; basal cell with 35-50 setae (fig.133); head and mesosoma dark brown to brown, conspicuously darker than light brown to yellow metasoma.

FEMALE. Length 0.7-1.0 mm. Head dark brown; frons with transverse furrows just ventral to median ocellus and halfway between median ocellus and toruli, and longitudinal furrows bordering scrobal impression and eye margin orange to light brown; area between these furrows may be lighter brown than the rest of frons. Scape dark brown, pedicel yellow, funicle and club dusky. Mesosoma dark brown dorsally, light brown to orange laterally. Legs yellow. Metasoma yellow, slightly dusky dorsally.

Head 1.25-1.3 times wider than high. Lateral ocellus nearer to eye margin than to median ocellus (OOL/LOL 0.55-0.65). Scrobal impression glabrate. Frons with transverse furrow halfway between median ocellus and toruli, transverse furrow just ventral to median ocellus, longitudinal furrows connecting them bordering eye margin and scrobal impression.

Interantennal projection absent or very small. Subocular sulcus absent. Sculpture on head imbricate.

Antenna with scape 2.5-2.8 times longer than wide, with flattened ventral expansion. Ventral expansion slightly incised in apical half. Pedicel 1.3-1.4 times longer than wide. All funicular segments subequal in length and width. Club 2.4-2.5 times longer than wide.

Mesosoma dorsally reticulate to imbricate; flattened so that mesoscutum, scutellum and axillae all lie in approximately the same plane. Scutellum slightly wider than long. Propodeum faintly sculptured. Mesopleuron glabrate. Sternopleural suture not reaching anterior margin of mesopleuron, connected to mesopleural suture.

Wings hyaline, veins light brown. Forewing with marginal fringe extending to postmarginal vein. Basal cell (fig.133) with 36-48 setae. Speculum separated from posterior margin of wing by more setae on dorsal surface of wing than a single line representing the subcubital vein. CC/MV 1.9-2.0, MV/PMV 1.5-2.15, MV/SV 1.45-1.7, PMV/SV 0.8-0.95.

Metasoma reticulate to imbricate.

MALE. Length 0.8-0.9 mm. Coloration as in female except pedicel orange to brown, metasoma brown dorsally. Funicular segments subequal in length, each segment with dorsal projection; projections progressively shorter distally.

DISTRIBUTION. USA, Texas.

BIOLOGY AND HOSTS. Swept from *Pithecellobium flexicaule* (Fabaceae: Mimosoidea).

MATERIAL EXAMINED. Holotype ♀, USA, Texas, Hidalgo Co., 2 mi. N. Mercedes, Hoblitzelle Farms (Texas A & M), 30.v.1983, C.W. Melton, sweeping *Pithecellobium flexicaule* (USNM, point).

3♀, 2♂ paratypes: USA, Texas: as holotype but 21.v.1983 (1♀, 1♂, USNM); Hidalgo Co., 1 mi. N. Mercedes, on Mile 2 West, 23.vi.1983, C.W. Melton, on *Pithecellobium flexicaule*, (1♀, 1♂, USNM); Cameron Co., 3 mi. W. Santa Rosa, sugar mill, 16.vi.1983, C.W. Melton, on *Pithecellobium flexicaule* (1♀, BMNH).

ETYMOLOGY. The Latin *minutus*, meaning little or small; referring to its extremely small size.

AULAFRONS Group

Females of the Aulafrons Group are distinguished by the following combination of characters: frons with transverse furrow halfway between the toruli and median ocellus; notauli incomplete (fig.119); F1 as long as or only slightly shorter than F2 (fig.75); speculum open to posterior margin of forewing (fig.140). Two other groups, the Anellarius Group and the Minutus Group, have the transverse furrow on the frons, however the

Anellarius Group has F1 reduced to the size of an anellus, and the Minutus Group has the speculum separated from the posterior margin of the wing by more setae than a single row representing the subcubital vein. Additionally, both of these groups have complete notauli.

This group contains the single species, *T. aulafrons*.

***Tanaostigmodes aulafrons* LaSalle, sp. n.**

Figures 75, 119, 140.

DIAGNOSIS. Females of *T. aulafrons* are distinguished from other species of *Tanaostigmodes* by the following characters: frons with transverse furrow halfway between torulus and median ocellus; notauli incomplete (fig. 119); F1 as long as or only slightly shorter than F2 (fig. 75); speculum open to posterior margin of wing (fig. 140); scape with flattened ventral expansion, less than 2.5 times longer than wide (fig. 75).

FEMALE. Length 1.55-1.75 mm. Head black (may have very weak metallic shine) with yellow markings as follows: spot ventral to median ocellus; transverse stripe on frons corresponding with transverse furrow; large spot ventral and medial to lower eye margin; face medially. Scape black with small white to yellow mark basally. Pedicel black basally, white to yellow apically. Anelli and F1 dark brown, each successive funicular segment slightly lighter in color, F6 brown to light brown. Club yellow to light brown. Mesosoma black (may have very weak metallic shine), except yellow area on prepectus dorsally and tegula anterodorsally, and yellow sternum. Coxae yellow. Legs yellow except middle femur with subapical brown band; fore and middle tibiae with subbasal brown band; hind leg with brown knees. Metasoma yellow, with longitudinal black to brown stripe laterally on T2-T5, dorsum slightly dusky medially.

Head 1.25-1.3 times wider than high. Lateral ocellus nearer to eye margin than to median ocellus (OOL/LOL 0.6-0.7). Scrobal impression glabrate medially, reticulate laterally. Frons with transverse furrow halfway between median ocellus and toruli extending from eye margin to scrobal impression. Subocular sulcus absent. Sculpture on head imbricate.

Antenna (fig. 75) with scape 2.1-2.25 times longer than wide, with flattened ventral expansion. Pedicel 1.55-1.7 times longer than wide. F1 and F5 subequal in length and width, F2-F4 slightly longer than wide, F6 slightly wider than long. Club 1.8-1.9 times longer than wide.

Mesosoma with mesoscutum imbricate. Scutellum imbricate to reticulate laterally, longitudinally elongate reticulate medially. Notauli incomplete, neither meeting nor reaching the posterior margin of the mesoscutum (fig. 119). Mesopleuron imbricate to reticulate. Sternopleural suture neither reaching anterior margin of mesopleuron, nor connected to very faint mesopleural suture.

Wings hyaline, veins light brown. Forewing with marginal fringe extending to postmarginal vein. Basal cell (fig. 140) with 30-40 setae. CC/MV 1.9-2.0, MV/PMV 1.15-1.35, MV/SV 1.5-1.65, PMV/SV 1.2-1.3.

Metasoma reticulate to imbricate.

MALE. Unknown.

DISTRIBUTION. COSTA RICA.

BIOLOGY AND HOSTS. Unknown.

MATERIAL EXAMINED. Holotype ♀, COSTA RICA, Guanacaste, Santa Rosa Park, 8.xii.1976, D.H. Janzen, dry hill (AEI, point).

1 ♀ paratype. As holotype but 14.viii.1977 (1 ♀, AEI);

ETYMOLOGY. From the Latin *aulax*, meaning furrow, and *frons*; referring to the transverse furrow on the frons.

GRACILIS Group

Females of the Gracilis Group are distinguished by the following combination of characters: funicle long and slender, with all segments distinctly longer than wide (fig.62)(within *Tanaostigmodes* this character is unique to this group); subocular sulcus absent; scape more than 4 times longer than wide, without ventral expansion (fig.62); mesopleuron strigulate anteriorly, glabrate posteriorly. Males unknown.

There are two species in this group, *gracilis* and *dominicensis*.

Tanaostigmodes gracilis LaSalle, sp. n.

DIAGNOSIS. Females of *T. gracilis* are distinguished from other species of *Tanaostigmodes* by the following characters: funicle long and slender, with all funicular segments distinctly longer than wide; scape without ventral expansion, more than 4 times longer than wide; scutellum reticulate; basal cell with more than 25 setae.

FEMALE. Length 1.55 mm. Head dark brown. Scape yellow; pedicel light brown; remainder of antenna brown. Mesosoma brown, prepectus posteriorly and mesopleuron anterodorsally light brown. Fore and hind coxa, fore femur brown; middle coxa, middle and hind femora, all tibiae and tarsi yellow, may have brown markings of varying size and intensity. Metasoma yellow, with lateral, longitudinal dark brown stripe, T2-T7 darkened medially.

Head 1.25 times wider than high. Lateral ocellus slightly nearer to median ocellus than to eye margin (OOL/LOL 1.05). Scrobal impression glabrate. Interantennal projection present, pointed apically. Subocular sulcus absent. Face reticulate, frons reticulate to imbricate, remainder of head imbricate.

Antenna with scape 4.15 times longer than wide. Pedicel 1.5 times longer than wide. A1 subequal in length and width to A2. All funicular segments longer than wide, subequal in length. Club 2.7 times longer than wide.

Mesosoma dorsally reticulate. Propodeum faintly sculptured to glabrate medially, with median and submedian carina; callus lightly imbricate. Mesopleuron glabrate, lightly strigulate anteriorly. Sternopleural suture not reaching anterior margin of mesopleuron, connected to mesopleural suture.

Wings hyaline, veins light brown to yellow. Forewing with marginal fringe extending to postmarginal vein. Basal cell with 30 setae. CC/MV 2.25, MV/PMV 1.05, MV/SV 1.25, PMV/SV 1.15.

Metasoma reticulate to imbricate.

MALE. Unknown.

DISTRIBUTION. COSTA RICA.

BIOLOGY AND HOSTS. Unknown.

MATERIAL EXAMINED. Holotype ♀, COSTA RICA, Puntarenas, 8 km. S. Miramar, Hwy. 1 & Rio Naranjo, 7.xi.1980, J.B. Woolley (USNM, point).

This species known only from the holotype.

ETYMOLOGY. The Latin *gracilis*, meaning slender; referring to the elongate, slender antennae.

Tanaostigmodes dominicensis LaSalle, sp. n.
Figure 62.

DIAGNOSIS. Females of *T. dominicensis* are distinguished from other species of *Tanaostigmodes* by the following characters: funicle long and slender, with all funicular segments distinctly longer than wide (fig.62); scape without ventral expansion, more than 4 times longer than wide; scutellum coriaceous; basal cell with fewer than 20 setae.

FEMALE. Length 1.3 mm. Head and body black to dark brown, prepectus posteriorly brown to light brown. Scape and pedicel yellow, scape with dark spot dorsoapically, pedicel darkened dorsally; remainder of antenna brown. Fore and hind coxae basally, middle coxa, and all legs yellow. Metasoma dark brown dorsally except for basal area and T7 yellow; yellow ventrally.

Head 1.15 times wider than high. Lateral ocellus nearer to eye margin than to median ocellus (OOL/LOL 0.75). Scrobal impression glabrate. Interantennal projection present, pointed apically. Subocular sulcus absent. Frons and face reticulate to imbricate, remainder of head imbricate.

Antenna (fig.62) with scape 4.85 times longer than wide. Pedicel 1.35 times longer than wide. A1 subequal in length and width to A2. All funicular segments subequal in length, distinctly longer than wide. Club 2.25 times longer than wide.

Mesosoma with mesoscutum and axilla imbricate. Scutellum mainly coriaceous, slightly imbricate anteriorly. Propodeum very lightly

sculptured. Mesopleuron strigulate anteriorly, fading to glabrate posteriorly and ventrally. Sternopleural suture not reaching anterior margin of mesopleuron, connected to mesopleural suture.

Wings hyaline, veins light brown to yellow. Forewing with marginal fringe extending to postmarginal vein. Basal cell with 12-17 setae. CC/MV 1.9, MV/PMV 1.4, MV/SV 1.4, PMV/SV 1.0.

Metasoma reticulate to imbricate.

MALE. Unknown.

DISTRIBUTION. WINDWARD ISLANDS: Dominica.

BIOLOGY AND HOSTS. Unknown.

MATERIAL EXAMINED. Holotype ♀, WINDWARD ISLANDS, Dominica, 1 mi. E. Calibishie, 27.ii.1965, H.E. Evans (USNM, point).

This species known only from the holotype.

ETYMOLOGY. From Dominica; referring to the locality where this species was collected.

DESANTISI Group

Females of the Desantisi Group are distinguished by the following combination of characters: scrobal impression with carinate lateral margin (figs.45-46) (a character unique to this species group); interantennal projection present, prominent; each funicular segment wider than preceding one, so that F6 is distinctly wider than F1 (fig.66); club wider than F6 (*T. insculptus* has an antenna which is similar to this (fig.67), but this species differs in the other characters); scape 5.0-6.0 times longer than wide, without ventral expansion. Males unknown.

There are two species included in this group, *desantisi* and *punctus*.

Tanaostigmodes desantisi LaSalle, sp. n.

Figures 46,66,152.

DIAGNOSIS. Females of *T. desantisi* are distinguished from other species of *Tanaostigmodes* by the following characters: scrobal impression with carinate lateral margin (fig.46); interantennal projection prominent, pointed apically, with carinate lateral margin; each funicular segment wider than preceding segment, so that F6 is distinctly wider than F1 (fig.66); club wider than F6; scape 5.0-6.0 times longer than wide, without ventral expansion; scutellum reticulate anteriorly, coriaceous posteriorly; hind femur without tooth on ventral margin (fig.152); face and frons with minute punctures (fig.46).

FEMALE. Length 2.4-2.65 mm. Frons, face and gena orange yellow; vertex, occiput and small area at ventral margin of eye brown. Scape yellow, darkened dorsally; remainder of antenna brown. Body dark brown, mesoscutum laterally, prepectus and mesopleuron anteriorly light brown. Hind coxa ventrally, femora and tibiae basally and apically, and tarsi light brown to yellow. Ovipositor sheaths light yellow, brown apically.

Head (fig.46) 1.25-1.45 times wider than high. Lateral ocellus about equidistant from median ocellus and eye margin (OOL/LOL 0.95-1.1). Scrobal impression reticulate; lateral margin carinate, the carina extending to median ocellus. Interantennal projection prominent, pointed apically, laterally carinate. Subocular sulcus present, complete. Frons and face reticulate to imbricate, with scattered minute punctures. Occiput and gena elongate reticulate to imbricate.

Antenna (fig.66) with scape 5.0-5.9 times longer than wide. Pedicel 1.5-1.65 times longer than wide. A1 subequal in width to, slightly shorter than A2. F1 slightly longer than wide; each funicular segment wider than preceding one; F6 wider than long, distinctly wider than F1. Club 1.35-1.7 times longer than wide, wider than F6.

Mesosoma dorsally mainly reticulate to imbricate. Scutellum reticulate anteriorly, faintly imbricate to coriaceous posteriorly. Propodeum faintly imbricate to glabrate medially, faintly reticulate laterally. Mesopleuron faintly reticulate to imbricate anteriorly, glabrate posteriorly. Sternopleural suture not reaching anterior margin of mesopleuron, connected to faint mesopleural suture. Hind femur without tooth on ventral margin (fig.152).

Wings hyaline, veins light brown to yellow. Forewing with marginal fringe extending to apex of wing or slightly past. Basal cell with 29-34 setae. CC/MV 1.9-2.15, MV/PMV 1.85-2.1, MV/SV 2.1-2.25, PMV/SV 1.0-1.2.

Metasoma imbricate.

MALE. Unknown

DISTRIBUTION. BRAZIL: Pernambuco.

BIOLOGY AND HOSTS. The plant "catingueira" mentioned in the label data is probably *Caesalpinia pyramidalis* (Fabaceae; Caesalpinoidea).

MATERIAL EXAMINED. Holotype ♀, BRAZIL, Pernambuco, Gloria do Goita, iv.1972, Bezerra, catingueira (MLP, point).

3♀ paratypes. As holotype (2♀, MLP; 1♀, USNM).

ETYMOLOGY. Named for Luis De Santis.

***Tanaostigmodes punctus* LaSalle, sp. n.**

Figures 45,151.

DIAGNOSIS. Females of *T. punctus* are distinguished from other species of *Tanaostigmodes* by the following characters: scrobal impression with

carinate lateral margin (fig.45); interantennal projection prominent, pointed apically; each funicular segment wider than preceding segment, so that F6 is distinctly wider than F1; club wider than F6; scape 5.0-6.0 times longer than wide, without ventral expansion; scutellum coriaceous anteriorly, glabrate posteriorly; hind femur with tooth on ventral margin near apex (fig.151); face and frons with large, setiferous punctures (fig.45).

FEMALE. Length 1.9 mm. Head and body brown. Face, gena and frons ventrally yellow. Scape light brown to yellow, darkened dorsally; remainder of antenna brown. Tibiae apically, tarsi and ovipositor sheaths light brown to yellow.

Head (fig.45) 1.3 times wider than high. Lateral ocellus slightly closer to median ocellus than to eye margin (OOL/LOL 1.25). Scrobal impression transversely strigulate, lateral margins carinate. Interantennal projection pointed apically. Subocular sulcus present, complete. Head coriaceous to imbricate with numerous setiferous punctures on frons, face and gena.

Antenna with scape 5.45 times longer than wide. Pedicel 1.45 times longer than wide. A1 about equal in width to, slightly shorter than A2. F1 slightly longer than wide; each funicular segment wider than the preceding one; F6 wider than long, distinctly wider than F1. Club 1.4 times longer than wide, wider than F6.

Mesosoma dorsally imbricate to coriaceous. Scutellum coriaceous anteriorly, glabrate posteriorly. Propodeum with small submedian carina, faintly imbricate laterally. Mesopleuron mainly glabrate, lightly strigulate anteriorly. Sternopleural suture not reaching anterior margin of mesopleuron, connected to faint mesopleural suture. Ventral margin of hind femur with a tooth or denticle near the apex (fig.151).

Wings hyaline, veins light brown to yellow. Marginal fringe extending to apex of postmarginal vein. Basal cell with 43-47 setae. CC/MV 2.7, MV/PMV 1.1, MV/SV 1.5, PMV/SV 1.35.

Metasoma imbricate to coriaceous.

MALE. Unknown.

DISTRIBUTION. BRAZIL: Minas Gerais.

BIOLOGY AND HOSTS. Unknown.

MATERIAL EXAMINED. Holotype ♀, BRAZIL, Minas Gerais, Pedra Azul, xi.1972, Seabra & Oliveira (CNC, point).

This species known only from the holotype.

ETYMOLOGY. The Latin *punctus*, meaning a small hole; referring to the large shallow punctures on the face and frons.

INSCULPTUS Group

Females of the Insculptus Group are distinguished by the following combination of characters: scutellum coriaceous; speculum separated from posterior margin of forewing by more setae (on the ventral surface of the wing) than a single line representing the subcubital vein; scape without ventral expansion, more than 3 times longer than wide (fig.67); interantennal projection small but present (fig.47). The first three characters are shared with *T. kiefferi*, however *kiefferi* lacks an interantennal projection which is present (although small) in *insculptus*. The antenna (fig.67) is similar to that seen in the Desantisi Group, with each successive funicular segment slightly larger than the preceding one, however it shares none of the other distinctive characters of that group.

This group contains the single species, *T. insculptus*.

Tanaostigmodes insculptus LaSalle, sp. n.

Figures 47,67.

DIAGNOSIS. Females of *T. insculptus* are distinguished from other species of *Tanaostigmodes* by the following characters: scutellum coriaceous; speculum separated from posterior margin of forewing by more setae (on the ventral surface of the wing) than a single line representing the subcubital vein; scape 3.5 times longer than wide, without ventral expansion (fig.67); interantennal projection small but present (fig.47); each successive funicular segment slightly wider than the preceding one (fig.67).

FEMALE. Length 1.9 mm. Head and body dark brown to black. Scape light brown to yellow, darkened dorsally, with small, translucent, ventral expansion apically; remainder of antenna dark brown. Legs dark brown, tibiae apically and tarsi light brown to yellow. T8 apically light brown.

Head (fig.47) 1.25 times wider than high. Lateral ocellus about equidistant from eye margin and median ocellus (OOL/LOL 0.95). Scrobal impression lightly sculptured dorsally, reticulate to rugose; glabrate ventrally. Interantennal projection small. Subocular sulcus complete. Face and frons imbricate to coriaceous with many minute, setiferous punctures.

Antenna (fig.67) with scape 3.5 times longer than wide. Pedicel 1.35 times longer than wide. A1 subequal in length and width to A2. F1 longer than wide, each successive funicular segment slightly wider than preceding one, F6 subequal in length and width. Club 1.65 times longer than wide.

Mesosoma with many minute, setiferous punctures. Mesoscutum imbricate to coriaceous. Scutellum coriaceous, with a transverse glabrate stripe near posterior margin, and with transverse row of strong setae in this glabrate area. Propodeum imbricate to rugose with a small median carina. Mesopleuron mainly glabrate, imbricate anterodorsally. Sternopleural suture not reaching anterior margin of mesopleuron, connected to mesopleural suture. Ventral margin of hind femur with a subapical denticle.

Wings hyaline, veins light brown. Forewing with marginal fringe extending to postmarginal vein. Basal cell with 32 setae. Wing veins slender. Speculum separated from posterior margin of forewing by more setae (on ventral surface of wing) than a single line representing subcubital vein. CC/MV 2.15, MV/PMV 1.8, MV/SV 2.0, PMV/SV 1.15.

Metasoma reticulate to imbricate. Posterior margin of T2 with strong medial incision, posterior margin of T3-T6 with slight medial incision. T2-T6 with medial line.

MALE. Unknown.

DISTRIBUTION. BRAZIL: Minas Gerais.

BIOLOGY AND HOSTS. Unknown.

MATERIAL EXAMINED. Holotype ♀, BRAZIL, Minas Gerais, Aguas Vermelhas, xii.1983, M. Alvarenga (CNC, point).

This species known only from the holotype.

ETYMOLOGY. The Latin *insculptus*, meaning engraved; referring to the coriaceous, or engraved, sculpture on the scutellum.

KIEFFERI Group

Females of the Kiefferi Group are distinguished by the following combination of characters: scutellum coriaceous (fig.91); speculum separated from posterior margin of forewing by more setae (on the ventral surface of the wing) than a single line representing the subcubital vein (fig.139); scape without ventral expansion, more than 3 times longer than wide (fig.68); interantennal projection absent (fig.31). The first three characters are shared with *T. insculptus*, however *insculptus* has a small interantennal projection which is absent *kiefferi*.

This group contains the single species, *T. kiefferi*.

Tanaostigmodes kiefferi (Mayr), comb. n.

Figures 31,68,91,139,161.

Monopleurothrix kiefferi Mayr, 1905:181. Lectotype ♀ (present designation), PARAGUAY (NHMV) [examined].

DIAGNOSIS. Females of *T. kiefferi* are distinguished from other species of *Tanaostigmodes* by the following characters: scutellum coriaceous (fig.91); speculum separated from posterior margin of forewing by more setae (on the ventral surface of the wing) than a single line representing the subcubital vein (fig.139); scape 3.5 times longer than wide, without ventral expansion (fig.68); interantennal projection absent (fig.31).

FEMALE. Length 2.05-2.6 mm. Head and body black to dark brown. Antenna brown to dark brown; scape with small translucent ventral expansion apically. Legs dark brown; knees and tibiae apically may be light brown to yellow. Tarsi yellow to light brown.

Head (fig.31) 1.3-1.4 times wider than high. Lateral ocellus usually nearer to median ocellus than to eye margin, rarely equidistant from both (OOL/LOL 1.0-1.35). Vertex with transverse medial carina just posterior to lateral ocelli. Scrobal impression imbricate to coriaceous. Interantennal projection absent. Subocular sulcus complete. Head imbricate to coriaceous, frons and face with scattered, minute, setiferous punctures.

Antenna (fig.68) with scape 3.4-3.75 times longer than wide. Pedicel 1.25-1.5 times longer than wide. A1 subequal in length, slightly narrower than A2. F1 longer than wide; funicular segments decreasing slightly in length distally; F6 from subequal in length and width to slightly wider than long. Club 1.85-2.25 times longer than wide.

Mesosoma with mesoscutum imbricate to coriaceous with scattered, minute, setiferous punctures. Scutellum (fig.91) coriaceous. Propodeum imbricate to coriaceous with median carina and one or more submedian carinae. Mesopleuron reticulate to imbricate anteriorly, glabrate posteriorly and anterior to mesopleural suture. Sternopleural suture not reaching anterior margin of mesopleuron, connected to mesopleural suture.

Wings hyaline, veins brown to light brown or yellow. Forewing with marginal fringe extending past apex of wing, often reaching postmarginal vein. Basal cell (fig.139) with 34-65 setae. Speculum separated from posterior wing margin by more setae (on ventral surface of wing) than a single line representing the subcubital vein. CC/MV 2.25-2.5, MV/PMV 1.55-1.9, MV/SV 2.0-2.3, PMV/SV 1.15-1.3.

Metasoma (fig.161) imbricate. Posterior margin of T2-T5 with slight medial incisions. T2-T5 with medial lines.

MALE. Length 1.7-2.15 mm. Coloration as in female. Funicular segments subequal in length, each with dorsal projection. F1-F5 slightly wider than long (with projection), F6 subequal in length and width.

DISTRIBUTION. PARAGUAY; BRAZIL: Santa Catarina.

BIOLOGY AND HOSTS. Reared from a gall on an unknown plant. From label data one assumes that the galls are globose, and contain more than one individual.

MATERIAL EXAMINED. Lectotype ♀, PARAGUAY [exact locality unknown], G. Mayr, from gall (NHMV, on minuten).

Paralectotypes. As lectotype (36♀, 7♂, NHMV; 1♀, 1♂, USNM. 1♀: BMNH, CNC, UCR, AEI, MLP).

Non-type material. PARAGUAY: "gall rot. polythalama" (1♀, MLP). BRAZIL, Santa Catarina: Nova Teutonia, 300-500 m., x.1972, F. Plaumann (6♀, 11♂, CNC. 1♀, 1♂: USNM, LAS, MLP, TAMU, ANIC, QMB, PPRI, ZIL).

FISHERI Group

Females of the Fisheri Group are distinguished by the following combination of characters: interantennal projection absent (fig.32); scape more than 3 times longer than wide, without ventral expansion (figs.63-64); scutellum reticulate, imbricate, or with otherwise raised sculpture; frons without transverse furrow. Club brown to black, concolorous with funicle, never white to yellow in contrast to brown or black funicle; body brown to black, never with metallic coloration. Male antenna either with funicular segments dorsally expanded (*fisheri*, *madrensis*) or with funicular rami (*yuohuae*). Frons may have weak transverse furrow halfway between torulus and anterior ocellus.

Five species are placed in the Fisheri Group: *madrensis*, *fisheri*, *yuohuae*, *anexochus*, and *brevisulcus*. *T. madrensis* is easily separated from the remaining four species by characters that are unique within this species group: strong propodeal plicae, and a strong transverse carina at the posterior margin of the propodeum connecting the plicae (fig.113); prominent white setae on the face and frons; and large, very shallow, setiferous punctures on the mesoscutum. The remaining four species, *fisheri*, *anexochus*, *yuohuae*, and *brevisulcus*, form a closely related group, and are difficult to distinguish from each other. *T. yuohuae* is the only one of these species with F1 shorter than F2 (fig.64). *T. brevisulcus* is the only one with incomplete notauli, although this may be extremely difficult to see.

Tanaostigmodes madrensis LaSalle, sp. n.

Figures 113,166.

DIAGNOSIS. Females of *T. madrensis* are distinguished from other species of *Tanaostigmodes* by the following characters: interantennal projection absent; scape without ventral expansion, more than 3 times longer than wide; scutellum reticulate to imbricate; frons without transverse furrow; propodeum with plicae, and carina along posterior margin which connects the plicae (fig.113); face and frons with prominent white setae; mesoscutum with large, very shallow, setiferous punctures.

FEMALE. Length 1.5-1.85 mm. Head and body black. Scape yellow, darkened dorsally; remainder of antenna black to dark brown. Knees yellow; tibiae apically, and tarsi light brown to yellow. Ovipositor sheaths yellow with dark line apically. Face, frons, mesosoma dorsally, callus, and metasoma laterally with scattered white setae.

Head 1.1-1.4 times wider than high. Lateral ocellus nearer to median ocellus than to eye margin (OOL/LOL 1.5-1.7). Scrobal impression reticulate. Interantennal projection absent. Subocular sulcus complete. Head imbricate, frons and face with scattered large, very shallow, setiferous punctures.

Antenna with scape 4.55-5.5 times longer than wide. Pedicel 1.6-1.85 times longer than wide. A1 subequal in length and width to A2. Funicular segments subequal in length; F1 longer than wide; funicular segments

increasing slightly in width distally; F6 subequal in length and width. Club 1.8-2.3 times longer than wide.

Mesosoma with mesoscutum imbricate, scutellum and axilla reticulate to imbricate. Entire dorsum of mesosoma with scattered large, very shallow, setiferous punctures. Propodeum glabrate to imbricate, with strong plica, and transverse carina at posterior margin of propodeum connecting plicae (fig.113). Mesopleuron glabrate, strigulate anteriorly. Sternopleural suture not reaching anterior margin of mesopleuron, connected to mesopleural suture.

Wings hyaline to very lightly infumated, veins brown. Forewing with marginal fringe extending to postmarginal vein. Basal cell with 32-50 setae. CC/MV 1.8-1.95, MV/PMV 1.8-2.05, MV/SV 1.9-2.15, PMV/SV 1.0-1.15.

Metasoma reticulate dorsally, imbricate laterally. Posterior margins of T2-T4 with slight medial incision.

MALE. Length 1.25-1.3 mm. Coloration as in female. Funicular segments subequal in length, projecting dorsally. Dorsal projections on F3 and F4 slightly taller than on the other funicle segments.

DISTRIBUTION. MEXICO: Morelos.

BIOLOGY AND HOSTS. Swept from flowers of *Aeschynomene petraea* var. *madrensis* (Fabaceae: Faboidea). One unemerged female was dissected from a gall within the ovary of one of these flowers (fig.166).

MATERIAL EXAMINED. Holotype ♀, MEXICO, Morelos, Canon del Lobo, 20 km. E. Cuernavaca, 7.vii.1981, J. LaSalle, on *Aeschynomene petraea* var. *madrensis* (voucher specimen of plant in UCR Herbarium, #24555) (USNM, point).

4♀, 2♂ paratypes. As holotype (2♀, 2♂, USNM. 1♀: BMNH, CNC).

ETYMOLOGY. From *madrensis*; referring to the varietal name of the host plant.

***Tanaostigmodes fisheri* LaSalle, sp. n.**

Figures 63, 156, 167.

DIAGNOSIS. Females of *T. fisheri* are distinguished from other species of *Tanaostigmodes* by the following characters: interantennal projection absent; scape without ventral expansion, more than 3 times longer than wide (fig.63); scutellum reticulate to imbricate; frons without transverse furrow; propodeum without plicae; scape yellow (may be darkened dorsally), in contrast to brown to dark brown funicle; F1 as long as F2 (fig.63); posterior margin of T2-T4 with distinct, but small, medial incision (fig.156); notauli complete.

FEMALE. Length 1.85-2.75 mm. Head and body black. Scape yellow, darkened dorsally. Knees and tarsi yellow. Tibiae from entirely yellow to brown basally (except for area around knees) and yellow apically. Amount of brown coloration variable. Ovipositor yellow with dark line apically.

Head 1.25-1.35 times wider than high. Lateral ocellus nearer to median ocellus than to eye margin (OOL/LOL 1.15-1.3). Scrobal impression glabrate. Interantennal projection absent. Subocular sulcus complete. Head imbricate to coriaceous.

Antenna (fig.63) with scape 4.45-5.15 times longer than wide. Pedicel 1.3-1.65 times longer than wide. A1 subequal in width to, slightly shorter than or equal in length to A2. F1-F5 subequal in length, F6 slightly shorter; F1 longer than wide; F2-F6 subequal in length and width. Club 2.1-2.35 times longer than wide.

Mesosoma dorsally reticulate to imbricate. Propodeum reticulate to imbricate. Mesopleuron glabrate, strigulate anteriorly. Sternopleural suture not reaching anterior margin of mesopleuron, apparently not connected to faint mesopleural suture.

Wings hyaline, veins light brown to yellow. Forewing with marginal fringe extending to postmarginal vein. Basal cell with 27-40 setae. CC/MV 2.2-2.55, MV/PMV 1.15-1.35, MV/SV 1.3-1.65, PMV/SV 1.05-1.2.

Metasoma reticulate to imbricate. Posterior margin of T2-T4 with very slight median incision (fig.156).

MALE. Length 1.9-2.3 mm. Coloration as in female except some to all tarsal segments may be light brown to brown. Funicular segments subequal in length, each with a dorsal projection; projection usually as tall as or taller than length of segment.

DISTRIBUTION. MEXICO: Baja California Sur; USA: Arizona.

Galls on *Calliandra californica* almost certainly attributable to this species were observed by E. M. Fisher and the author near Catavina, Baja California (Norte), but no specimens were reared from these galls.

BIOLOGY AND HOSTS. Reared from galls on *Calliandra californica* (Fabaceae; Mimosoidea). Galls (fig.167) are oval, single chambered, 4-5 mm wide, 5-7 mm long and densely covered with long, fine, white hairs. They occur in flower clusters, and may result from eggs laid in ovaries.

MATERIAL EXAMINED. Holotype ♀, MEXICO, Baja California Sur, 25 rd. km. E. Rancho San Jose de Castro, Vizcaino Peninsula, 25.iii.1980, E.M. Fisher, gall on *Calliandra californica* (USNM, point).

12♀, 5♂ paratypes. As holotype (6♀, 5♂, USNM. 1♀: BMNH, CNC, LAS, UCR, AEI, MLP).

Non-type material. USA, Arizona: Santa Cruz Co., 12 mi. NE. Nogales, 28.viii.1982, J. LaSalle & S.Y.H. Lin (1♀, UCR).

ETYMOLOGY. Named for the collector of the type series, Eric M. Fisher.

Tanaostigmodes yuohuae LaSalle, sp. n.

Figures 32,64,101,155,168.

DIAGNOSIS. Females of *T. yuohuae* are distinguished from other species of *Tanaostigmodes* by the following characters: interantennal projection absent (fig.32); scape without ventral expansion, more than 3 times longer than wide (fig.64); scutellum reticulate to imbricate; frons without transverse furrow (fig.32); propodeum without plicae (fig.101); scape yellow (may be darkened dorsally), in contrast to brown to dark brown funicle; F1 slightly but distinctly shorter than F2 (fig.64); posterior margin of T2-T4 without distinct medial incision (fig.155); notauli complete.

FEMALE. Length 1.4-2.2 mm. Head and body dark brown to black. Scape light brown to yellow, brown dorsally; remainder of antenna brown. Femora brown, yellow basally and apically; fore tibia yellow, brown ventrally; middle tibia yellow; hind tibia yellow, darkened subbasally. Tarsi yellow. Ovipositor sheaths yellow.

Head (fig.32) 1.25-1.3 times wider than high. Lateral ocellus about equidistant from median ocellus and eye margin (OOL/LOL 0.95-1.05). Scrobal impression glabrate. Interantennal projection absent. Subocular sulcus present, complete, but faint and hard to see. Frons and face imbricate to reticulate; remainder of head imbricate.

Antenna (fig.64) with scape 4.75-5.45 times longer than wide. Pedicel 1.5-1.85 times longer than wide. A1 about equal in width, slightly shorter than A2. F1 subquadrate, slightly shorter than F2; F2-F4 longer than wide; F5-F6 slightly longer than wide to subequal in length and width. Club 2.1-2.45 times longer than wide.

Mesosoma dorsally reticulate to imbricate. Notauli complete, but sometimes faint and difficult to see. Propodeum transversely imbricate medially, faintly reticulate laterally (fig.101). Mesopleuron glabrate to faintly strigulate. Sternopleural suture not reaching anterior margin of mesopleuron. Mesopleural suture absent or faint.

Wings hyaline, veins yellow to light brown. Forewing with marginal fringe extending to postmarginal vein. Basal cell with 20-39 setae. CC/MV 2.0-2.4, MV/PMV 1.3-1.5, MV/SV 1.35-1.7, PMV/SV 1.0-1.15.

Metasoma reticulate dorsally, reticulate to imbricate laterally and ventrally. Posterior margin of T2-T4 may have wide, very shallow emargination medially, but without distinct, apically pointed, median incision (fig.155).

MALE. Length 1.2-1.85 mm. Color as in female except scape light brown. Scape 2.8-3.25 times longer than wide. F1-F3 with long rami of about equal length. F4 clearly the longest funicular segment, almost twice as long as F3 or F5.

DISTRIBUTION. USA: Arizona; MEXICO: Sonora.

BIOLOGY AND HOSTS. Reared from galls on *Mimosa dysocarpa* (Fabaceae; Mimosoidea). The galls are small (ca 2 mm), globose, and are found on young stems, including leaf midribs and flower stalks (fig.168).

MATERIAL EXAMINED. Holotype ♀, USA, Arizona, Cochise Co., 2 mi. E. Bisbee, Jct. Hwy 80 & Warren Rd., 27.viii.1982, J. LaSalle & S.Y.H. Lin, sweeping *Mimosa dysocarpa* (voucher specimen of plant in UCR Herbarium, #27360) (USNM, point).

48♀, 79♂ paratypes. USA, Arizona: as holotype and reared from galls on *Mimosa dysocarpa* (19♀, 56♂, USNM. 2♀, 2♂: BMNH, CNC, LAS, UCR, AEI, MLP, TAMU, ANIC, QMB, PPRI, ZIL); Pima Co., 11.v.1972, F. Werner, *Mimosa* galls (1♀, USNM); Pima Co., Madera Canyon, Bog Springs Campground, 28.viii.1982, J. LaSalle (2♀, 1♂, UCR); Santa Cruz Co., Sycamore Canyon, Hank and Yank Springs, 4200', 7-8.viii.1982, G.A.P. Gibson (2♀, CNC); Santa Cruz Co., 1.0 mi. S. Pena Blanca Lake, 4100', 6.viii.1982, G.A.P. Gibson (1♀, CNC); Cochise Co., Chiricahua Mountains, Sunny Flat Campground, 24.viii.1982, J. LaSalle, sweeping *Mimosa dysocarpa* (1♀, UCR).

Non-type material. MEXICO, Sonora: 29 mi. N. Hermosillo, 9.viii.1960, P.H. Arnaud, E.S. Ross, D.C. Rentz (1♀, 1♂, CAS).

ETYMOLOGY. Named for Sarah YuoHua Lin. (This species name is pronounced yo-wah-ee).

***Tanaostigmodes anexochus* LaSalle, sp. n.**

DIAGNOSIS. Females of *T. anexochus* are distinguished from other species of *Tanaostigmodes* by the following characters: interantennal projection absent; scape without ventral expansion, more than 3 times longer than wide; scutellum imbricate; frons without transverse furrow; propodeum without plicae; scape brown to dark brown, concolorous with funicle; F1 as long as F2; mesoscutum predominantly reticulate; notauli complete (although difficult to see).

FEMALE. Length 1.35-1.55 mm. Head and body black. Face with minute yellow spot bordering oral fossa at subocular sulcus. Scape brown; remainder of antenna brown to black. Knees and tarsi light brown to yellow. Tibiae from entirely yellow, to brown basally (except for area around knees) and light brown to yellow apically; amount of brown coloration variable.

Head 1.15-1.2 times wider than high. Lateral ocellus from slightly nearer to median ocellus than eye margin, to equidistant from both (OOL/LOL 1.0-1.15) Scrobal impression glabrate. Interantennal projection absent. Subocular sulcus complete, but faint and hard to see. Face and frons lightly imbricate to coriaceous, with a few scattered, minute punctures.

Antenna with scape 3.7-4.0 times longer than wide. Pedicel 1.3-1.7 times longer than wide. A1 subequal in length and width to A2. All

funicular segments subequal in length; F1-F4 slightly longer than wide; F5 and F6 subequal in length and width. Club 2.25-2.65 times longer than wide.

Mesosoma dorsally predominantly imbricate. Propodeum imbricate. Mesopleuron glabrate, faintly strigulate anteriorly. Sternopleural suture not reaching anterior margin of mesopleuron, apparently not connected with faint mesopleural suture.

Wings hyaline, veins light brown to yellow. Forewing with marginal fringe extending to apex of postmarginal vein. Basal cell with 37-49 setae. CC/MV 2.05-2.15, MV/PMV 1.45-1.5, MV/SV 1.6-1.65, PMV/SV 1.1-1.15.

Metasoma reticulate to imbricate.

MALE. Unknown.

DISTRIBUTION. MEXICO: Puebla, Morelos.

BIOLOGY AND HOSTS. Unknown.

MATERIAL EXAMINED. Holotype ♀, MEXICO, Puebla, 15 km. W. Izucar de Matamoros, 27.vi.1981, J. LaSalle (USNM, point).

1 ♀ paratype. MEXICO, Morelos: 20 km. E. Cuernavaca, Canon del Lobo, 7.vii.1981, J. LaSalle (1 ♀, USNM).

ETYMOLOGY. From the Greek *an-*, meaning without, and *exochos*, meaning projection; referring to the absence of an interantennal projection.

***Tanaostigmodes brevisulcus* LaSalle, sp. n.**

DIAGNOSIS. Females of *T. brevisulcus* are distinguished from other species of *Tanaostigmodes* by the following characters: interantennal projection absent; scape without ventral expansion, more than 3 times longer than wide; scutellum reticulate to imbricate; frons without transverse furrow; propodeum without plicae; scape brown to dark brown, concolorous with funicle; F1 as long as F2; mesoscutum predominantly imbricate; notauli incomplete (although difficult to see).

FEMALE. Length 1.3 mm. Head and body dark brown. Antenna and legs brown; knees and tarsi light brown to yellow.

Head 1.3 times wider than high. Lateral ocellus nearer to median ocellus than to eye margin (OOL/LOL 1.55). Vertex with short median carina posterior to ocelli. Scrobal impression glabrate. Interantennal projection absent. Subocular sulcus absent. Head reticulate to imbricate.

Antenna with scape 3.65 times longer than wide. Pedicel 1.8 times longer than wide. A1 subequal in length and width to A2. Funicular segments subequal in length; F1 slightly longer than wide; funicular segments increasing slightly in width distally; F6 subequal in length and width. Club 2.4 times longer than wide.

Mesosoma dorsally reticulate to imbricate. Notauli incomplete, neither meeting nor reaching posterior margin of mesoscutum. Mesoscutum predominantly reticulate. Mesopleuron reticulate to strigulate anteriorly, very lightly reticulate to glabrate posteriorly. Sternopleural suture not reaching anterior margin of mesopleuron, connected to faint mesopleural suture.

Wings hyaline, veins light brown. Forewing with marginal and postmarginal veins swollen at junction of stigmal vein. Marginal fringe extending to apex of postmarginal vein. Basal cell with 28-30 setae. CC/MV 2.7, MV/PMV 1.9, MV/SV 1.9, PMV/SV 1.0.

Metasoma reticulate.

MALE. Unknown.

DISTRIBUTION. MEXICO: Puebla.

BIOLOGY AND HOSTS. Unknown.

MATERIAL EXAMINED. Holotype ♀, MEXICO, Puebla, 15 km. W. Izucar de Matamoros, 27.vi.1981, J. LaSalle (USNM, point).

This species known only from the holotype.

ETYMOLOGY. From the Latin *brevis*, meaning short, and *sulcus*; referring to the incomplete notauli.

HOWARDII Group

Females of the Howardii Group are distinguished by the following combination of characters: notauli somewhat thickened, easily visible, incomplete (fig.88); interantennal projection present, pointed dorsally, although sometimes small (fig.33); scape 2.0-3.2 times longer than wide, with slight to distinct flattened, ventral expansion (figs.5,65); no metallic coloration. Males (known only for *tescus*) have funicular segments with dorsal expansion; frons with faint transverse furrow at level halfway between torulus and median ocellus.

There are two species included in this group, *howardii* and *tescus*.

Tanaostigmodes howardii Ashmead

Figures 16,33,65,88,102,141,169,170.

Tanaostigmodes howardii Ashmead, 1896:19. Lectotype ♀ (present designation), USA, California, Riverside Co. (USNM, #3468) [examined].

DIAGNOSIS. Females of *T. howardii* are distinguished from other species of *Tanaostigmodes* by the following characters: notauli incomplete, somewhat thickened and easily visible (fig.88); scape with flattened ventral

expansion, less than 2.5 times longer than wide (fig.65); basal cell densely setose, with over 100 setae on dorsal surface of wing (fig.141); speculum separated from posterior margin of forewing by more setae than a single row representing subcubital vein; general body coloration yellow and black.

FEMALE. Length 1.65-3.0 mm. Head yellow; the following dark brown to black markings may be present: spot on face medial and slightly ventral to ventral margin of eye; spot on clypeus; anterior tentorial pit; from almost entire vertex to a small spot bordering each ocellus; occiput; gena sometimes dusky. Scape yellow to dark brown, margin of ventral expansion sometimes darkened; pedicel yellow to dusky or brown; anelli yellow; F1-F5 dusky brown to black; F6 yellow to brown; club light yellow to white. Dorsum of mesosoma dusky to dark brown or black. Prepectus, mesopleuron dorsally, propodeum laterally yellow. Tegula white to yellow. Remainder of mesosoma and legs usually dusky to dark brown, rarely yellow. Tarsi yellow to dusky. Metasoma brown to black with longitudinal yellow stripe laterally. Terga with yellow stripe anteriorly, but this stripe usually not visible due to telescoping of metasomal segments.

Head (fig.33) 1.2-1.45 times wider than high. Lateral ocellus usually slightly closer to eye margin than to median ocellus (OOL/LOL 0.7-1.0). Scrobal impression poorly defined, reticulate. Interantennal projection small. Subocular sulcus present, incomplete, extending about half or less the distance from eye to oral fossa. Frons and face reticulate; occiput and gena reticulate to imbricate.

Antenna (fig.65) with scape 2.1-2.4 times longer than wide, with flattened ventral expansion. Pedicel 1.3-1.6 times longer than wide. A1 shorter and narrower than A2. F1 slightly longer than wide; funicular segments decreasing in length distally, F6 subquadrate. Club 1.7-2.35 times longer than wide.

Mesosoma dorsally reticulate. Notauli incomplete, neither meeting nor reaching posterior margin of mesoscutum (fig.88). Propodeum reticulate (fig.102). Mesopleuron reticulate. Sternopleural suture not reaching anterior margin of mesopleuron, connected to mesopleural suture.

Wings hyaline to lightly and uniformly infuscated. Veins light brown to yellow. Marginal fringe extending to apex of wing or slightly past. Basal cell (fig.141) densely setose with well over 100 setae. Speculum separated from posterior margin of forewing by more setae than a single row representing subcubital vein. CC/MV 2.15-2.5, MV/PMV 1.8-2.45, MV/SV 1.45-1.7, PMV/SV 0.65-0.9.

Metasoma reticulate. T2 with medial line; medial line may be indicated on T3-T5.

MALE. Unknown. Two gynandromorphs have been collected, with male genitalia but otherwise possessing predominantly female characteristics.

DISTRIBUTION. USA: California, Arizona; MEXICO: Baja California, Sonora.

BIOLOGY AND HOSTS. Reared from galls on *Acacia greggii* (Fabaceae; Mimosoidea). Two gall types are formed by *T. howardii*. The first type is globular, 5-8 mm. in diameter, and narrowly attached to the stems (fig.169). Galls of this type are mentioned by Houard (1946:59) and Felt (1940, p.273; plate 2(1), p.48). Felt also described and pictured a narrow, non-detachable stem gall (p. 272-3; plate 2(2), p.48) which he attributed to *T. howardii*, however these galls are made by *T. tychii* or *T. tescus*. In the caption for the plate he incorrectly referred to the host plant as *Mimosa biuncifera* (Fabaceae; Mimosoidea), but he correctly referred to this plant as *Acacia greggii* in the text.

The second gall type formed by *T. howardii* is formed between opposite leaflets on the compound leaves (fig.170). These galls form a small (3-4 mm.), woody union between the bases of the leaflets, with the leaflet apices projecting past the gall tissue.

Records from *Prosopis* may be erroneous.

MATERIAL EXAMINED. Lectotype ♀, USA, California, Riverside Co., Cabazon, 4.v.1891, D.W. Coquillett (USNM).

Paralectotypes. As lectotype (27♀, USNM; 1♀, CNC).

Non-type material. USA, California: San Bernardino Co., Morongo Valley, 15.v.1939, P.H. Timberlake, reared from *Acacia greggii* gall (1♀, UCR); Riverside Co., Painted Canyon, ca 8 mi. E. Mecca, 9.v.1981, J. LaSalle, sweeping *Acacia greggii* (15♀, LAS). USA, Arizona: Br't Angel, Col Canyon [presumably Coconino Co., Grand Canyon National Park, Bright Angel Canyon], 2300 ft., 10 May 1903, H.S. Barber (8♀, USNM); Tucson, 1935, L.H. Weld (2♀, USNM); Box Canyon, 24.iv.1979, B. Spears, reared from *Acacia greggii* gall (17♀, UAT); Sta. Rita Rge. Res., 25.iii and 23.iv.1978, B. Spears, reared from *Acacia greggii* gall (3♀, UAT; gynandromorph, LAS). MEXICO, Baja California: 36 mi. SE El Rosario, Rancho El Progreso, 25.iii.1979, J. LaSalle, reared from *Acacia greggii* galls (15♀, UCR; 5♀, USNM; 3♀, LAS); 0.3 mi. SE Catavina, in arroyo, 27.iii.1979, J. LaSalle, reared from *Acacia greggii* galls (18♀, UCR; 5♀, USNM; 3♀, LAS); 8 km. N., 2 km. W. Catavina, 4-5.iv.1981, J. LaSalle, reared from *Acacia greggii* gall (10♀, LAS); 20 km. E. El Rosario, 5-6.iv.1981, J.T. Huber & J. LaSalle, reared from *Acacia greggii* gall (9♀, USNM; 9♀, gynandromorph, LAS. 3♀: BMNH, CNC, AEI, MLP, TAMU, ANIC, QMB, PPRI, ZIL); 3 mi. S. Puertecitos, 23-24.v.1987, J. LaSalle, yellow pan traps under flowering *Acacia greggii* (2♀, LAS). MEXICO, Sonora: Bahia de San Carlos, 27.iii.1980, J. LaSalle, reared from *Acacia greggii* gall (1♀, UCR).

COMMENTS. There must be additional specimens which Ashmead examined when describing this species, as he mentioned specimens from Los Angeles and Arizona; however I find no other specimens which can definitely be referred to the type series. There are 4 females in the USNM labeled "Ariz.", and 1 female labeled "Los Angeles, Cal". These specimens were probably the ones examined by Ashmead, however there are no labels or other evidence to support them as types. Coquillett's notes (at USNM)

indicate that most of the type specimens were collected at Cabazon, San Diego County, California in 1891. At that time the present Riverside County had not been formed, and was still part of San Diego County. The location of Cabazon may have moved since 1891, but all possible locations for this collection are in what is now Riverside County.

Tanaostigmodes tescus LaSalle, sp. n.
Figures 5, 142, 171.

DIAGNOSIS. Females of *T. tescus* are distinguished from other species of *Tanaostigmodes* by the following characters: notauli incomplete, somewhat thickened and easily visible; scape with flattened ventral expansion, 2.5-3.15 times longer than wide (fig.5); basal cell with less than 40 setae on dorsal surface of wing (fig.142); speculum open to posterior margin of forewing; general body coloration orange and brown.

FEMALE. Length 2.05-2.8 mm. Head yellow to orange. Dusky areas may be present on face medially between toruli, and laterally between the subocular sulcus and the torulus. Scape yellow to orange, margin of ventral expansion may be darkened or translucent. Pedicel and anelli orange-yellow, F1-F5 dusky to brown, F6 from light yellow to brown; club light yellow to white. Mesosoma and legs orange to orange yellow. Anterior margin of metanotum and propodeum dark brown. Dark markings sometimes present on dorsum of mesosoma. Metasoma orange to orange-yellow, terga sometimes with faint transverse brown markings.

Head 1.25-1.4 times wider than high. Lateral ocellus about equidistant from median ocellus and eye margin (OOL/LOL 0.8-1.1). Scrobal impression shallow, lightly reticulate. Interantennal projection small, with sharp median carina dorsally. Subocular sulcus present, complete. Frons and face lightly reticulate to imbricate.

Antenna (fig.5) with scape 2.5-3.15 times longer than wide, with flattened ventral expansion. Pedicel 1.3-1.5 times longer than wide. A1 shorter and narrower than A2. F1 longer than wide, funicular segments decreasing in length distally, F6 subquadrate. Club 1.9-2.5 times longer than wide.

Mesosoma dorsally reticulate. Notauli incomplete, neither meeting nor reaching the posterior margin of the mesoscutum. Propodeum reticulate. Mesopleuron reticulate to lightly reticulate. Sternopleural suture not reaching anterior margin of mesopleuron, not connected to mesopleural suture.

Wings hyaline, veins yellow to brown. Marginal fringe extending to apex of wing. Basal cell (fig.142) with 15-30 setae. Speculum open to posterior margin of forewing. CC/MV 2.5-2.95, MV/PMV 1.7-2.05, MV/SV 1.25-1.6, PMV/SV 0.55-0.9.

Metasoma reticulate to imbricate. T2 with broad medial line basally.

MALE. 1.95-2.25 mm. Body and head entirely dark brown to black. Antenna and legs brown, tarsi yellow to brown. F1-F6 with dorsal

projections; the projections slightly shorter distally. Frons with poorly defined, short, shallow transverse furrows lateral to scrobal impression halfway between torulus and median ocellus.

DISTRIBUTION. USA: California, Arizona; MEXICO: Sonora.

BIOLOGY AND HOSTS. Reared from galls on *Acacia greggii* (Fabaceae; Mimosoidea). The gall formed is a narrow, oval, non-detachable stem gall (fig.171) which ranges from 3-7 mm in width and 6-10 mm in length. Several galls may be present very close to one another causing a larger swelling on the stem. The gall is similar in size and shape to that formed by *T. tychii* (see discussion under that species).

MATERIAL EXAMINED. Holotype ♀, USA, California, San Bernardino Co., Afton Canyon, 29.iv.1981, R.D. Goeden & D.W. Ricker, reared from *Acacia greggii* galls (USNM, point).

44♀, 4♂ paratypes. USA, California: as holotype (3♀, 1♂, USNM; 1♀, LAS); San Bernardino Co., Yucca Valley, nr. Pioneertown, 14.v.1981, G. Gibson (1♀, CNC). USA, Arizona: Pima Co., Tucson, Rillito River, 27.iv.1979, B. Spears, reared from *Acacia greggii* galls (14♀, 2♂, UAT; 1♀, 1♂, BMNH. 1♀: CNC, LAS, AEI, MLP, TAMU, ANIC, QMB, PPRI, ZIL). MEXICO, Sonora: Bahia de San Carlos, 27.iii.1980, J. LaSalle, reared from *Acacia greggii* galls (13♀, UCR; 2♀, USNM).

ETYMOLOGY. The Latin *tescus*, meaning desert; referring to the habitat of this species.

TENUISULCUS Group

Females of the *Tenuisulcus* Group are distinguished from other *Tanaostigmodes* by the following characters: notauli incomplete, narrow (fig.120); frons and dorsum of mesosoma with slight metallic color; scape with flattened ventral expansion, 2.8-3.2 times longer than wide (fig.72). *T. tenuisulcus* differs from members of the Howardii Group, which also have incomplete notauli and the scape with a flattened ventral expansion, because the notauli are narrower, and there is weak but distinct metallic coloration.

This group contains the single species, *T. tenuisulcus*.

Tanaostigmodes tenuisulcus LaSalle, sp. n.

Figures 72, 120.

DIAGNOSIS. Females of *T. tenuisulcus* are distinguished from other species of *Tanaostigmodes* by the following characters: notauli incomplete, narrow (fig.120); frons and dorsum of mesosoma with slight metallic color;

scape with flattened ventral expansion, 2.8-3.2 times longer than wide (fig.72); interantennal projection present, small.

FEMALE. Length 1.7-1.8 mm. Head yellow with dusky markings on face and lower frons. Upper frons and vertex brown, with weak metallic blue to green shine. Scape yellow, with small brown spot at apex and brown ventral expansion. Pedicel pale yellow, brown basally. Remainder of antenna yellow to light brown. Mesosoma brown dorsally, with weak metallic blue to green shine, which is strongest on the scutellum. Mesopleuron orange, remainder of mesosoma yellow. Coxae and legs yellow, femora with dorsal brown spot subapically. Metasoma yellow, diffused with dusky coloration dorsally.

Head 1.25-1.3 times wider than high. Lateral ocellus nearer to eye margin than to median ocellus (OOL/LOL 0.7-0.8). Scrobal impression glabrate to faintly reticulate. Interantennal projection small, well-defined and pointed apically. Subocular sulcus absent. Head imbricate, face and frons with scattered minute punctures.

Antenna (fig.72) with scape 2.8-3.2 times longer than wide, with flattened ventral expansion in apical half. Pedicel 1.25-1.35 times longer than wide. A1 subequal in size to A2. F1-F4 slightly longer than wide, F5-F6 subquadrate. Club 1.9-2.0 times longer than wide.

Mesosoma dorsally reticulate. Notauli incomplete, neither meeting nor reaching the posterior margin of the mesoscutum (fig.120). Propodeum reticulate. Mesopleuron reticulate. Sternopleural suture not reaching anterior margin of mesopleuron, connected to mesopleural suture.

Wings hyaline, veins light brown. Marginal fringe extending past apex of wing, reaching or nearly reaching postmarginal vein. Basal cell with 40-45 setae. CC/MV 1.9-2.0, MV/PMV 1.5-1.55, MV/SV 1.5-1.65, PMV/SV 1.0-1.05.

Metasoma reticulate dorsally. T2 with faint medial line.

MALE. Unknown.

DISTRIBUTION. BAHAMA ISLANDS.

BIOLOGY AND HOSTS. Unknown.

MATERIAL EXAMINED. Holotype ♀, BAHAMA ISLANDS, Exuma, Simon's Point, 15-20.iv.1986, T.L. McCabe (USNM, point).

1♀ paratype. As holotype (1♀, USNM).

ETYMOLOGY. From the Latin *tenuis*, meaning thin, and *sulcus*; referring to the notauli which are more slender in this species than in the Howardii Group.

COCCOPHAGUS Group

Females of the Coccophagus Group are distinguished from other *Tanaostigmodes* by the following characters: marginal fringe absent (fig.128) (a character only found in this group); basal cell with 0-2 setae on dorsal surface of wing; scape more than 3 times longer than wide; no metallic coloration.

This group contains the single species, *T. coccophagus*.

Tanaostigmodes coccophagus (Blanchard), comb. n.

Figure 128.

Eutricnemus coccophagus Blanchard, 1940:107. Lectotype ♀ (present designation), ARGENTINA, Entre Rios, Concordia (MLP) [examined].

DIAGNOSIS. Females of *T. coccophagus* are distinguished from other species of *Tanaostigmodes* by the following characters: marginal fringe absent (fig.128); basal cell with 0-2 setae on dorsal surface of wing; scape more than 3 times longer than wide, with small ventral expansion; no metallic coloration; interantennal projection present, prominent.

FEMALE. Length 1.7-2.35 mm. Head and body black except face with small light brown to yellow spot bordering oral fossa lateral to clypeus; tegula translucent anteriorly, brown posteriorly. Scape black with translucent ventral expansion apically. Pedicel brown to black; anelli brown; funicular segments brown, black apically; club dusky to light brown. Femora and tibiae brown, yellow basally and apically; tarsi yellow to dusky.

Head 1.15-1.35 times wider than high. Lateral ocellus nearer to eye margin than to median ocellus (OOL/LOL 0.6-0.75). Scrobal impression glabrate. Interantennal projection prominent, pointed dorsally. Subocular sulcus present but faintly indicated. Frons and face reticulate to elongate reticulate.

Antenna with scape 3.35-4.0 times longer than wide, with small, flattened ventral expansion apically. Pedicel 1.45-1.5 times longer than wide. A1 shorter and narrower than A2. Funicular segments subquadrate. Club 1.8-2.0 times longer than wide.

Mesosoma dorsally reticulate. Propodeum lightly reticulate with some strigations between spiracles. Mesopleuron longitudinally reticulate. Sternopleural suture not reaching anterior margin of mesopleuron. Mesopleural suture faint, poorly indicated.

Wings hyaline, veins light brown. Forewing (fig.128) with marginal fringe absent. Basal cell usually without setae, may have 1-2 setae. CC/MV 2.15-2.25, MV/PMV 1.8-1.95, MV/SV 1.9-2.15, PMV/SV 1.0-1.1.

Metasoma reticulate dorsally, reticulate to imbricate ventrally.

MALE. Length 1.75-1.9 mm. Coloration as in female. Antenna with long funicular rami on F1-F3; rami subequal in length. F1-F4 successively

longer than the preceding segment; F5-F6 subequal in length, shorter than F4. Frons without transverse furrow.

DISTRIBUTION. ARGENTINA: Entre Rios.

BIOLOGY AND HOSTS. Unknown. Label data stating from *Tachardiella argentina* (Homoptera; Lacciferidae) is probably erroneous.

MATERIAL EXAMINED. Lectotype ♀, ARGENTINA, Entre Rios, Concordia, s/ *Tachardiella argentina* (MLP, point).

Paralectotypes. As lectotype (10♀, 2♂, MLP; 1♀, MLP, on permanent loan to USNM).

TYCHII Group

Although I feel that the Tychii Group is composed of species which are more closely related to each other than to any species outside of this group, derived characters have not been found to define this group, and it may be paraphyletic. Females of the Tychii Group are distinguished by the following combination of characters: scape from 2.4 times longer than wide and with a slight ventral expansion to 5.3 times longer than wide and without ventral expansion (figs.69-71,73-74); funicular segments usually from slightly longer than wide to subequal in length and width, never with F1 reduced to the size of an anellus, never with all funicular segments longer than wide, never with each successive funicular segment wider than the previous one; head without transverse furrow on frons (fig.34); interantennal projection present, sometimes small, usually pointed dorsally; notauli complete (fig.13); propodeum without plicae; forewing with stigmal vein neither swollen nor perpendicular to postmarginal vein (fig.125-127); no metallic color.

Three complexes of closely related species are seen within this group: *larsoni*, *xanthogaster*, *sonorensis*, and *mosesi* have F1 wider than long and distinctly shorter (about half the length) than F2 (figs.69-70), marginal fringe extending at most to apex of forewing (figs.125-126), and scutellum reticulate, although in some species there is a longitudinal elongation of reticulations (figs.92-93); *albiclavus*, *ringueleti*, and *mexicanus* have distinct longitudinal sculpture on the scutellum in the form of raised, parallel lines (fig.94), marginal fringe clearly extending past apex of forewing (fig.127), and F1 longer than wide and usually as long as or longer than F2 (fig.71); *tychii*, *koebelei*, and *tetartus* have F1 longer than wide and as long as or longer than F2 (figs.73-74), scutellum reticulate, and marginal fringe variable.

Tanaostigmodes albiclavus Girault

Figures 12-14, 34, 71, 94, 127, 172.

Tanaostigmodes albiclavus Girault, 1917:4 (as *Taneostigmodes albiclavus*).

Holotype ♀, USA, Arizona, Catalina Springs (USNM, #20082) [examined].

DIAGNOSIS. Females of *T. albiclavus* are distinguished from other species of *Tanaostigmodes* by the following characters: scape 3.85-4.25 times longer than wide, with small ventral expansion apically (fig.71); interantennal projection present, small (fig.34); notauli complete (fig.13); scutellum with longitudinal sculpture in the form of raised, parallel lines (fig.94); F1 as long as or longer than F2 (fig.71); marginal fringe extending past apex of forewing (fig.127); mesoscutum without distinct silvery white setae; club entirely white.

FEMALE. Length 1.95-2.7 mm. Head and body black. Scape yellow to light brown, with translucent ventral expansion apically. Pedicel through F4 black; F5 from entirely black to black basally, brown apically; F6 from black basally, brown apically to light yellow to white; club light yellow to white. Legs black to dark brown; femora and tibiae usually with small light brown to yellow spots apically and basally; tarsi light brown to yellow. Metasomal terga with transverse yellow to orange markings anteriorly, but due to telescoping of the metasomal segments, these markings only seen in specimens with extremely distended metasomas. Ovipositor sheaths light brown to yellow or white, darkened apically.

Head (fig.34) 1.15-1.25 times wider than high. Lateral ocellus usually slightly nearer to eye margin than to median ocellus (OOL/LOL 0.85-1.0). Scrobal impression glabrate. Interantennal projection present, small, narrowly rounded dorsally. Subocular sulcus present, complete, but faint and hard to see in some specimens. Frons and face imbricate to reticulate; frons lateral to scrobal impression with large rough wrinkles overlaid with the surface sculpture.

Antenna (fig.71) with scape 3.85-4.25 times longer than wide, with small flattened ventral expansion apically. Pedicel 1.45-1.75 times longer than wide. A1 about as long as, slightly narrower than A2. F1 longer than wide, slightly shorter than F2; F2 longest funicular segment; segments decreasing in length distally; F6 from slightly wider than long to subequal in length and width. Club 1.6-2.0 times longer than wide.

Mesosoma with mesoscutum (fig.13) imbricate to reticulate; scutellum (fig.94) with distinct longitudinally elongate sculpture. Propodeum lightly imbricate. Mesopleuron finely reticulate to elongate reticulate dorsally, imbricate to glabrate ventrally. Sternopleural suture not reaching anterior margin of mesopleuron, faintly connected to mesopleural suture.

Wings hyaline, veins light brown. Forewing (fig.127) with marginal fringe extending past apex of wing, but not reaching postmarginal vein. Basal cell with 23-34 setae. CC/MV 2.2-2.45, MV/PMV 1.5-1.85, MV/SV 1.55-1.9, PMV/SV 0.9-1.1.

Metasoma reticulate dorsally, reticulate to imbricate ventrally.

MALE. Length 1.5-2.15 mm. Color as in female except scape light brown to yellow; pedicel through F6 brown; club brown basally, light yellow to white apically. Scape with flattened ventral expansion, 2.25-2.5 times longer than wide. F1-F4 with long rami; R1 and R2 subequal in length, R3 and R4 progressively slightly shorter. F1-F3 increasing in length distally; F4 and F5 subequal in length to F3; F6 noticeably shorter than F5.

DISTRIBUTION. USA: Arizona, New Mexico, Texas; MEXICO: Chihuahua.

BIOLOGY AND HOSTS. From galls on *Mimosa biuncifera* (Fabaceae; Mimosoidea). The galls formed are woody, globose, non-detachable stem galls (fig.172), which range from 5-18 mm in diameter. Several adults may emerge from larger galls. This gall is pictured by Houard (1946:59) who attributed it to a cynipid. The cynipid inquiline *Myrtopsen mimosae* Weld also occupies this gall.

Another plant given as host is *Acacia greggii* (Fabaceae; Mimosoidea). These records need verification, as this plant is extremely similar to *M. biuncifera*.

MATERIAL EXAMINED. Holotype ♀, USA, Arizona, Catalina Springs, 5.v, Hubbard & Schwarz (USNM, point, left forewing and left antenna removed and mounted on slide in balsam).

Non-type material. USA, Arizona: [Santa Cruz Co.], Ruby, G.P. Engelhardt, gall on *Mimosa biuncifera* (14♀, 1♂, USNM); Santa Cruz Co., 14 mi. N. Nogales, 19.viii.1971, E.E. Grissell & R.F. Denno, stem gall on *Acacia greggii* (3♀, 2♂, USNM; 2♀, 1♂, FSCA); Santa Cruz Co., 10 mi. NE Nogales, 19.viii.1971, E.E. Grissell & R.F. Denno, stem gall on *Acacia greggii* (3♀, 2♂, USNM; 1♀, 1♂, FSCA); Santa Cruz Co., White Rock Campground, Pena Blanca Lake, 10.ix.1965, L. & C.W. O'Brien (1♀, FSCA); Santa Cruz Co., 1 mi. S. Pena Blanca Lake, 6.viii.1982, G.A.P. Gibson (1♀, CNC); Gila Co., Globe, Six-shooter Canyon, Parker Ranch, 22.viii.1952, H.B. Leech & J.W. Green (1♂, CAS); Santa Cruz Co., Gardner Canyon, 4.0 mi. N. Sonoita, 10.viii.1982, G.A.P. Gibson (3♀, 1♂, CNC); Pima Co., Coronado National Forest, Midland Picnic Area, 11 mi. NE Tanque Verde, 23.viii.1982, J. LaSalle & S.Y.H. Lin, reared from galls on *Mimosa biuncifera* (voucher specimen of plant in UCR Herbarium, #27359) (4♀, 5♂, UCR; 4♀, 5♂, USNM. 2♀, 2♂: BMNH, CNC, LAS, AEI, MLP, TAMU, ANIC, QMB, PPRI, ZIL); [Cochise Co.], Portal, 28.vii.1955, P.H. Timberlake, woody gall on *Mimosa biuncifera* (16♀, 1♂, UCR); Cochise Co., 1 mi. NE Portal, 14.ix.1978, J. LaSalle (2♀, 1♂, UCR); Cochise Co., 1 mi. NE Portal, 14.ix.1978, G. Gordh (1♀, UCR); Cochise Co., 1 mi. NE Portal, 25.viii.1982, J. LaSalle, screen sweeping (1♀, UCR); Cochise Co., 1 mi. E. Portal, 31.vii.1982, G.A.P. Gibson, sweeping *Acacia constricta* (1♂, CNC); Cochise Co., 2.7 mi. E. Paradise, 12.ix.1978, J. LaSalle (1♀, 1♂, UCR); Cochise Co., Peloncillo Mtns., Guadalupe Canyon, 12.viii.1982, G.A.P. Gibson (1♀, 1♂, CNC); Cochise Co., 30 mi. NE Douglas, Cottonwood Creek, 31.viii.1965 (1♀, UCR). USA, New Mexico: Eddy Co., Guadalupe Mtns., 6 mi. W. Jct. Hwy

285 & 137, 26.viii.1971, E.E. Grissell & R.F. Denno, stem gall on *Acacia greggii* (1♀, 3♂, USNM). USA, Texas: Brewster Co., Big Bend Nat'l Park, 5.3 mi. W. Panther Junction, 29.vi.1982, G.A.P. Gibson (1♂, CNC); Jeff Davis Co., Davis Mines State Park, Limpia Creek, 18.vii.1982, G.A.P. Gibson (2♀, 2♂, CNC). MEXICO, Chihuahua: 9 mi. S. Hidalgo del Parral, 26.vii.1967, R.C. Gardner, C.R. Kovacic & K. Lorenzen (1♀, UCD).

Tanaostigmodes ringueleti (Brèthes), comb. n.

Eutetracera ringueleti Brèthes, 1924:4. Lectotype ♀ (present designation), ARGENTINA, Entre Rios, La Plata, Rio Santiago (MBR) [examined].

DIAGNOSIS. Females of *T. ringueleti* are distinguished from other species of *Tanaostigmodes* by the following characters: scape 4.0-4.5 times longer than wide, with small ventral expansion apically; interantennal projection present, prominent; notauli complete; scutellum with longitudinal sculpture in the form of raised, parallel lines; F1 as long as or longer than F2; marginal fringe extending past apex of forewing to postmarginal vein; mesoscutum with distinct silvery white setae; club black to brown.

FEMALE. Length 1.8-2.4 mm. Head and body black to dark brown. Scape yellow to light brown, with translucent ventral expansion apically. Pedicel, anelli, and club apically brown, F1-F6 and club basally black. Femora usually yellow apically. Tibiae range from almost completely black to entirely yellow. Tarsi light brown to yellow.

Head 1.15-1.2 times wider than high. Lateral ocellus usually slightly nearer to eye margin than to median ocellus (OOL/LOL 0.7-1.0). Scrobal impression glabrate to transversely strigulate. Interantennal projection prominent, often with longitudinal median furrow. Subocular sulcus present, complete. Face reticulate, frons reticulate to imbricate, occiput and gena reticulate to imbricate.

Antenna with scape 4.0-4.5 times longer than wide, with small, flattened ventral expansion apically. Pedicel 1.25-1.8 times longer than wide. A1 about as long and wide as A2. F1 longer than wide, funicular segments decreasing in length distally, F6 from slightly longer than wide to subequal in length and width. Club 1.65-2.0 times longer than wide.

Mesosoma with mesoscutum imbricate to reticulate. Scutellum with distinct longitudinally elongate sculpture in the form of raised, parallel lines. Propodeum lightly imbricate. Mesopleuron finely reticulate to elongate reticulate dorsally, strigulate ventrally. Sternopleural suture not reaching apical margin of mesopleuron. Mesopleural suture absent, indicated by difference in sculpture between mesopleuron and glabrate area anterior to sternopleural and mesopleural sutures.

Wings hyaline, veins light brown. Forewing with marginal fringe extending to postmarginal vein. Basal cell with 53-75 setae. CC/MV 2.05-2.2, MV/PMV 1.15-1.6, MV/SV 1.3-1.7, PMV/SV 1.0-1.15.

Metasoma reticulate to imbricate dorsally, imbricate ventrally.

MALE. Length 1.65-1.9 mm. Coloration as in female except: scape darkened dorsally; fore femur partially to entirely yellow. F1-F4 with long rami, F5 with slight dorsal projection distally. R2 slightly longer than R1; R3 and R4 decreasing in length distally. F1-F5 increasing in length distally, F6 noticeably shorter than F5.

VARIATION. The two female specimens from Bolivia differ from other specimens in having the lateral ocellus slightly nearer to the median ocellus than to the eye margin (OOL/LOL 1.1-1.4), and having fewer setae (42-47) in the basal cell.

DISTRIBUTION. ARGENTINA: Entre Rios; BRAZIL: Rio de Janeiro, Santa Catarina; BOLIVIA.

BIOLOGY AND HOSTS. Reared from gall on *Calliandra bicolor* (Fabaceae; Mimosoidea), also associated with *C. selloi*. Brèthes described and illustrated the gall in the original description. It is globose, laterally attached to the branches, and can attain a diameter of 3-4 cm. A mature gall can contain close to 100 larvae.

MATERIAL EXAMINED. Lectotype ♀, ARGENTINA, Entre Rios, La Plata, Rio Santiago (MBR, slide).

Paralectotypes. As lectotype (1 ♂, MBR, same slide as lectotype; 2 ♀, 2 ♂, USNM, points).

Non-type material. BRAZIL, Rio de Janeiro: Guanabara, 22.xii.1971, Carneiro, *Calliandra selloi* (1 ♀, 1 ♂, MLP); BRAZIL, Santa Catarina: Nova Teutonia, 23.ix-3.xi.1944, F. Plaumann (8 ♀, 4 ♂, BMNH). BOLIVIA: Santa Cruz, J. Steinbach (2 ♀, MCZ).

COMMENTS. The specimen designated as lectotype was so designated because: it and the paralectotype male on the same slide are the only specimens actually marked by Brèthes as type material, and are presumable the specimens he intended to be the types, and it is the only female specimen in the MBR (where Brèthes intended his types to go). There are two female and two male paralectotypes in the USNM which are in better condition.

Tanaostigmodes mexicanus LaSalle, sp. n.

DIAGNOSIS. Females of *T. mexicanus* are distinguished from other species of *Tanaostigmodes* by the following characters: scape 3.9-4.2 times longer than wide, with small ventral expansion apically; interantennal projection present, small; notauli complete; scutellum with longitudinal sculpture in the form of raised, parallel lines; F1 as long as or longer than F2; marginal fringe extending past apex of forewing; mesoscutum without distinct silvery white setae; club black to brown basally, light brown to yellow apically.

FEMALE. Length 1.7-1.85 mm. Head and body black to very dark brown. Scape light brown to yellow, darkened dorsally, with small translucent ventral expansion apically; remainder of antenna black to dark brown, except club light brown to yellow apically. Femora and tibiae usually with small light brown to yellow marks apically and basally. Tarsi light brown to yellow. Ovipositor sheaths light brown to yellow or white, darkened apically.

Head 1.15-1.2 times wider than high. Lateral ocellus nearer to eye margin than to median ocellus (OOL/LOL 0.65-0.8). Scrobal impression glabrate. Interantennal projection narrowly rounded apically. Subocular sulcus present, complete, although faint and hard to see. Frons and face imbricate to reticulate; occiput and gena imbricate.

Antenna with scape 3.9-4.2 times longer than wide, with small, flattened ventral expansion apically. Pedicel 1.25-1.35 times longer than wide. A1 about equal in length, slightly shorter than A2. F1 longer than wide; F2 and F3 the longest funicular segments; funicular segments decreasing in length distal to F3; F6 subequal in length and width. Club 1.9-2.0 times longer than wide.

Mesosoma with mesoscutum imbricate to reticulate. Scutellum with distinct longitudinally elongate sculpture in the form of raised, parallel lines. Propodeum lightly imbricate. Mesopleuron finely reticulate to elongate reticulate dorsally, imbricate to glabrate ventrally. Sternopleural suture not reaching anterior margin of mesopleuron, connected to poorly distinguished mesopleural suture.

Wings hyaline, veins light brown. Forewing with marginal fringe extending to postmarginal vein. Basal cell with 30-48 setae. CC/MV 2.15-2.2, MV/PMV 1.55-1.8, MV/SV 1.6-1.8, PMV/SV 1.0-1.05.

Metasoma reticulate to imbricate.

MALE. Unknown.

VARIATION. The Michoacan specimen differs slightly from the other specimens as follows: face and frons with several minute punctures; scape 5.0 times longer than wide; pedicel 1.65 times longer than wide; club 2.45 times longer than wide; wing vein ratios CC/MV 2.0, MV/PMV 2.0, MV/SV 1.9, PMV/SV 0.95.

DISTRIBUTION. MEXICO: Puebla, Morelos, Michoacan.

BIOLOGY AND HOSTS. Michoacan specimen swept from *Mimosa guatamalensis* (Fabaceae; Mimosoidea).

MATERIAL EXAMINED. Holotype ♀, MEXICO, Puebla, 15 km. W. Izucar de Matamoros, 27.vi.1981, J. LaSalle (USNM, point).

1 ♀ paratype. MEXICO, Morelos: Yautepec, 31.vii.1963, F.D. Parker & L.A. Stange (1 ♀, UCD).

Non-type material. MEXICO, Michoacan: 3 km. N. Gabriel Zamora, 12.vii.1981, J. LaSalle, sweeping *Mimosa guatamalensis* (voucher specimen of plant in UCR Herbarium, #24575) (1 ♀, USNM).

ETYMOLOGY. From Mexico; referring to the Mexican distribution of this species.

Tanaostigmodes larsoni LaSalle, sp. n.

Figures 92,125

DIAGNOSIS. Females of *T. larsoni* are distinguished from other species of *Tanaostigmodes* by the following characters: scape 3.25-3.75 times longer than wide; interantennal projection present, small; notauli complete; F1 wider than long, noticeably shorter (about half the length) than F2; scutellum reticulate, the reticulations not elongate (fig.92); marginal fringe extending to apex of forewing (fig.125); tegula white with black border; basal cell with more than 30 setae (fig.125).

FEMALE. Length 1.25-1.65 mm. Head black, sometimes with slight metallic sheen. Frons with very small light brown spot on eye margin dorsal to ventral margin of eye. Clypeus with light brown to yellow spot medially; face with light brown to yellow spot bordering clypeus. Scape, pedicel, anelli, F1-F4 black to brown; F5-F6 brown to dusky; club yellow, may be dusky basally. Mesosoma black, prepectus with white spot dorsally. Tegula white except black border posteriorly and mesally. Coxae black dorsally, yellow ventrally. Legs with variable brown to black and yellow to white markings. Tarsi yellow, often dusky dorsally. Metasoma brown dorsally, with longitudinal white stripe laterally, dusky ventrally. Transverse yellow to orange stripes present on all terga, but these can only be seen in specimens in which the metasoma is distended. Ovipositor sheaths yellow, brown apically.

Head 1.1-1.25 times wider than high. Lateral ocellus nearer to eye margin than to median ocellus (OOL/LOL 0.65-0.7). Scrobal impression glabrate. Interantennal projection small, rounded, with no longitudinal, medial ridge. Subocular sulcus present, complete, but faint and hard to see. Sculpture on head elongate reticulate to imbricate.

Antenna with scape 3.25-3.75 times longer than wide. Pedicel 1.45-1.7 times longer than wide. A1 shorter and narrower than A2. F1 wider than long, noticeably shorter (about half the length) than F2. F2 shorter, usually noticeably, than F3. F3 longer than wide, subequal in length to F4. F5-F6 decreasing in length distally, F6 subquadrate. Club 1.7-2.15 times longer than wide.

Mesosoma dorsally reticulate. Scutellum (fig.92) reticulate. Propodeum glabrate medially, callus lightly reticulate. Mesopleuron elongate reticulate to imbricate. Sternopleural suture not reaching anterior margin of mesopleuron. Mesopleural suture faint, poorly indicated.

Wings hyaline, veins light brown. Marginal fringe extending to apex of forewing (fig.125). Basal cell with 31-42 setae. CC/MV 2.1-2.5, MV/PMV 1.4-1.85, MV/SV 1.35-1.65, PMV/SV 0.8-1.0.

Metasoma with T2-T4 reticulate dorsally, remainder of metasoma imbricate.

MALE. Length 1.15-1.35 mm. Color as in female except: frons with two yellow spots bordering eye margin; scape brown, with longitudinal yellow stripe ventrally, remainder of antenna brown to dusky; metasoma brown, with longitudinal yellow stripe ventrally. Frons with transverse furrow extending from eye margin to scrobal impression halfway between the torulus and the median ocellus. F1-F4 with long rami which decrease slightly in length distally. F1-F5 increasing in length distally, F5 noticeably shorter than F6.

DISTRIBUTION. USA: Arizona, Texas.

BIOLOGY AND HOSTS. Collected sweeping *Acacia constricta* (Fabaceae; Mimosoidea) (voucher specimen of plant in UCR Herbarium, #27358).

MATERIAL EXAMINED. Holotype ♀, USA, Arizona, Cochise Co., 1.0 mi. E. Portal, 4700', 31.vii.1982, G.A.P. Gibson, sweeping flowering *Acacia constricta* (USNM, point).

31 ♀, 8 ♂ paratypes. USA, Arizona: as holotype (4 ♀, 1 ♂, CNC); Cochise Co., 1 mi. NE Portal, 14.ix.1978, 28.viii.1979 & 25.viii.1982, J. LaSalle (6 ♀, 2 ♂, UCR. 1 ♀: ANIC, QMB, ZIL); Cochise Co., Portal, Southwest Research Station, 26.v.1981, M.E. Schauff (7 ♀, 2 ♂, USNM. 1 ♀: BMNH, LAS, AEI, MLP, TAMU, PPRI); Cochise Co., Portal, 2.v.1972, on *Acacia* and mesquite (2 ♀, 3 ♂, AMNH); Cochise Co., 7 mi. NE Douglas, 27.viii.1979, C.W. Melton (1 ♀, LAS). USA, Texas: Culberson Co., 3.6 mi. S. Pine Springs, old Guadalupe Pass Rd., nr. Guadalupe Springs, 5200', 20-22.vii.1982, G.A.P. Gibson, sweeping flowering *Acacia constricta* (1 ♀, CNC); Brewster Co., Big Bend National Park, Grapevine Hills Campground, 3200', 23-27.vi.1982, G.A.P. Gibson (1 ♀, CNC).

ETYMOLOGY. Named for cartoonist Gary Larson.

Tanaostigmodes xanthogaster LaSalle, sp. n.

DIAGNOSIS. Females of *T. xanthogaster* are distinguished from other species of *Tanaostigmodes* by the following characters: scape 2.4-2.8 times longer than wide, with flattened ventral expansion; interantennal projection present, small; notauli complete; F1 wider than long, noticeably shorter (about half the length) than F2; scutellum longitudinally elongate reticulate (especially medially); marginal fringe not extending to apex of forewing; tegula white with black stripe posteriorly; basal cell with less than 20 setae; metasoma yellow, dusky dorsally, with longitudinal black stripe laterally; frons entirely black.

FEMALE. Length 1.1-1.65 mm. Head and mesosoma black (may have slight metallic shine), except prepectus dorsally brown to orange, tegula white with black stripe posteriorly. Scape light yellow to white ventrobasally, black dorsoapically. Pedicel light yellow to white with small black area basally. Anelli and F1-F4 black, F5-F6 light yellow to white, club

white to yellow or dusky brown. Fore and hind coxae black basally, yellow apically; middle coxa yellow. Legs yellow, all femora white apically with black area subapically; fore and middle tibiae white basally with black area subbasally; hind tibia with some dusky coloration basally. Metasoma yellow, with longitudinal black stripe laterally on T2-T5, and light brown to brown area medially on T2-T4. Apex of ovipositor sheaths black.

Head 1.1-1.2 times wider than high. Lateral ocellus nearer to eye margin than to median ocellus (OOL/LOL 0.3-0.45). Scrobal impression glabrate medially, finely imbricate laterally. Interantennal projection small. Subocular sulcus absent. Head imbricate.

Antenna with scape 2.4-2.8 times longer than wide, with flattened ventral expansion which is slightly excised apically. Pedicel 1.45-1.6 times longer than wide. A1 and A2 approximately equal in size. F1 distinctly wider than long, noticeably shorter (about half the length) than F2. F2 slightly wider than long; F3 longer than wide; F4 subequal in length and width; F5 and F6 wider than long. Club 1.5-2.0 times longer than wide.

Mesosoma dorsally reticulate to elongate reticulate. Scutellum longitudinally elongate reticulate, especially medially. Propodeum finely imbricate to glabrate medially, callous lightly reticulate. Mesopleuron reticulate anteriorly, finely strigulate posteriorly. Sternopleural suture not reaching anterior margin of mesopleuron. Mesopleural suture absent.

Wings hyaline, veins light brown to yellow. Marginal fringe not quite extending to apex of forewing. Basal cell with 8-20 setae. CC/MV 1.7-1.85, MV/PMV 2-2.1, MV/SV 1.75-1.95, PMV/SV 0.9-0.95.

Metasoma reticulate dorsally, imbricate laterally.

MALE. Length 0.9-1.0 mm. Coloration as in female except antenna uniformly brown except scape basally and pedicel apically yellow; metasoma with T2-T5 brown dorsally, T6 dorsally and entire metasoma ventrally yellow. Frons with transverse furrow extending from eye margin to scrobal impression at level halfway between torulus and anterior ocellus. F1-F5 with long rami, each ramus slightly shorter than preceding one; each funicular segment slightly longer than preceding one.

DISTRIBUTION. USA: Texas.

BIOLOGY AND HOSTS. Collected sweeping *Pithecellobium flexicaule* (Fabaceae; Mimosoidea).

MATERIAL EXAMINED. Holotype ♀, USA, Texas, Hidalgo Co., 2 mi. S. Relampago, N. bank of Rio Grande, 4.xi.1983, C.W. Melton, on *Pithecellobium flexicaule* (USNM, point).

7♀, 2♂ paratypes. USA, Texas: as holotype and 15.xii.1983 (3♀, 2♂, USNM. 1♀: BMNH, LAS, UCR); Zapata Co., Falcon State Park, 250', 3.vii.1982, G.A.P. Gibson (1♀, CNC).

ETYMOLOGY. From the Greek *xanthos*, meaning yellow, and *gaster*; referring to the predominantly yellow color of the metasoma.

Tanaostigmodes sonorensis LaSalle, sp. n.

Figures 70,93,107,126.

DIAGNOSIS. Females of *T. sonorensis* are distinguished from other species of *Tanaostigmodes* by the following characters: scape 3.1-3.4 times longer than wide, with small, flattened ventral expansion apically (fig.70); interantennal projection present, small; notauli complete; F1 wider than long, noticeably shorter (about half the length) than F2 (fig.70); scutellum longitudinally elongate reticulate (especially medially) (fig.93); marginal fringe extending to apex of forewing (fig.126); tegula white with black stripe posteriorly and mesally; basal cell with less than 25 setae (fig.126); metasoma dark brown dorsally, white ventrally; frons black with white spot bordering eye margin.

FEMALE. Length 0.95-1.55 mm. Head black, frons with small white spot on eye margin dorsal to ventral margin of eye. Scape black to brown with slight, translucent ventral expansion apically. Pedicel black to brown, yellow to light brown apically. A1, A2, F1-F4, F5 ventrally black to brown, F5 dorsally, F6 and club light yellow to white. Mesosoma black, prepectus usually with small white spot posterodorsally; tegula white except black border posteriorly and mesally. Coxae black dorsally, yellow ventrally. Legs with variable brown to black and yellow to white markings. Tarsi light brown to yellow. Metasoma brown dorsally except medial orange spots on T2, T6 and T7. Transverse yellow to orange stripes present on all terga, but these can only be seen in specimens in which the metasoma is distended. Metasoma ventrally and T8 white to pink to orange. Ovipositor sheaths yellow, black apically.

Head 1.15-1.35 times wider than high. Lateral ocellus nearer to the eye margin than to the median ocellus (OOL/LOL 0.55-0.75). Scrobal impression glabrate. Interantennal projection small, rounded, with no longitudinal, medial ridge. Subocular sulcus present, complete, but faint and hard to see. Sculpture on head elongate reticulate to imbricate.

Antenna (fig.70) with scape 3.1-3.4 times longer than wide, with small, flattened, ventral expansion apically. Pedicel 1.3-1.7 times longer than wide. A1 shorter and narrower than A2. F1 wider than long, noticeably shorter (about half the length) than F2. F2 longer than wide, subequal in length to F3; F3-F6 decreasing in length distally, F6 subquadrate. Club 1.8-2.25 times longer than wide.

Mesosoma dorsally reticulate to elongate reticulate. Scutellum longitudinally elongate reticulate, especially medially (fig.93). Propodeum glabrate medially, callus faintly reticulate. Mesopleuron reticulate to elongate reticulate anteriorly, glabrate posteriorly (fig.107). Sternopleural suture not reaching anterior margin of mesopleuron. Mesopleural suture faint, poorly indicated.

Wings hyaline, veins light brown. Marginal fringe extending to apex of forewing (fig.126). Basal cell with 9-23 setae. CC/MV 2.2-2.45, MV/PMV 1.6-2.0, MV/SV 1.5-1.8, PMV/SV 0.9-1.05.

Metasoma with T2-T5 reticulate dorsally, remainder of metasoma imbricate.

MALE. Length 0.8-1.35. Color as in female except: frons with two white spots bordering eye margin; face with white spot bordering clypeus; scape brown, white ventrobasally, remainder of antenna brown; metasoma brown dorsally except median spot on T5 and T6 orange to pink or white, orange to pink or white ventrally. Frons with transverse furrow halfway between the torulus and the median ocellus. F1-F4 with long rami, which decrease slightly in length distally. F1-F5 increasing in length distally, F6 noticeably shorter than F5.

DISTRIBUTION. USA: Arizona, New Mexico, Texas; MEXICO: Sonora.

BIOLOGY AND HOSTS. Collected sweeping *Acacia constricta* (Fabaceae; Mimosoidea) (voucher specimen of plant in UCR Herbarium, #27358).

MATERIAL EXAMINED. Holotype ♀, USA, Arizona, Cochise Co., 1.0 mi. E. Portal, 4700', 31.vii.1982, G.A.P. Gibson, sweeping flowering *Acacia constricta* (USNM, point).

44♀, 41♂ paratypes. USA, Arizona: as holotype (4♀, CNC); Cochise Co., 1 mi. NE Portal, 14.ix.1978, J. LaSalle, on *Acacia constricta* (1♀, 7♂, UCR); Cochise Co., 1 mi. NE Portal, 28.viii.1979, C.W. Melton & J. LaSalle, on *Acacia constricta* (1♀, 6♂, USNM); Cochise Co., 1 mi. NE Portal, 25.viii.1982, J. LaSalle, on *Acacia constricta* (6♀, 9♂, USNM. 1♂: BMNH, LAS, AEI, MLP, TAMU, ANIC, QMB, PPRI, ZIL); Cochise Co., Portal, Southwest Research Station, 26.v.1981, M.E. Schauff (1♀, USNM); Cochise Co., 5.7 mi. E. Portal, 12.ix.1978, J. LaSalle (4♀, 2♂, UCR. 1♀: BMNH, LAS, AEI, MLP, TAMU, ANIC, QMB, PPRI, ZIL); Cochise Co., 2.7 mi. E. Paradise, 12.ix.1978, J. LaSalle (2♂, UCR); Cochise Co., 7.5 mi. E. Douglas, 15.ix.1978, J. LaSalle (1♀, 1♂, BMNH); Pima Co., 4 mi. S. Robles Junction, 26.viii.1979, C.W. Melton & J. LaSalle (1♀, 3♂, UCR); Pima Co., Brawley Wash, Mile Wide Rd., 1.5 mi. E. Sandaro Blvd., 2500', 3.viii.1982, G.A.P. Gibson, sweeping *Baccharis glutinosa* [Asteraceae] (1♀, 1♂, CNC); Arizona [other locality information not given], vii.1969, G.M. Forister, *Acacia constricta* (1♀, USNM). USA, New Mexico: Luna Co., 0.5 mi. S. Columbus, 13.ix.1978, J. LaSalle (1♀, UCR). USA, Texas: Culberson Co., 3.6 mi. S. Pine Springs, old Guadalupe Pass Rd., nr. Guadalupe Springs, 5200', 20-22.vii.1982, G.A.P. Gibson, sweeping flowering *Acacia constricta* (8♀, 2♂, CNC); Brewster Co., Big Bend National Park, Glenn Springs Rd., 0.5 mi. in, 3000', 23.vi.1982, G.A.P. Gibson (1♀, CNC); Brewster Co., Big Bend National Park, Grapevine Hills Campground, 3300', 12.vii.1982, G.A.P. Gibson (1♀, CNC); Brewster Co., Big Bend National Park, Oak Cyn.-Window Trail, 5400', 24-27.vi.1982, G.A.P. Gibson (2♀, CNC); MEXICO, Sonora: 40 km. N. Carbo, 22.vi.1981, J. LaSalle, on *Acacia constricta* (voucher specimen of plant in UCR Herbarium, #24557) (1♀, LAS).

ETYMOLOGY. From Sonora; referring to the Sonoran desert distribution.

Tanaostigmodes mosesi LaSalle, sp. n.

Figure 69.

DIAGNOSIS. Females of *T. mosesi* are distinguished from other species of *Tanaostigmodes* by the following characters: scape 4.6-5.35 times longer than wide, without ventral expansion (fig.69); interantennal projection present, small; notauli complete; F1 wider than long, noticeably shorter (about half the length) than F2 (fig.69); scutellum reticulate; marginal fringe not extending to apex of forewing; tegula entirely black; basal cell with less than 20 setae.

FEMALE. Length 1.55-2.15 mm. Head black. Frons with small yellow to orange spot on eye margin dorsal to ventral margin of eye. Clypeus may have small orange to yellow spot medially, face may have small orange to yellow spot bordering clypeus. Scape, pedicel, anelli, F1-F2 black; F3 black, white anterodorsally; F4-club white, F4 may have black base. Mesosoma black, prepectus with white spot dorsally. Fore coxa black, middle and hind coxae black dorsally, orange to yellow ventrally. Legs with variable brown to black and yellow to white markings. Tarsi yellow to light brown. Metasoma orange, T2-T5 with transverse brown markings (sometimes entire dorsum of tergum brown), T6 may have medial brown mark. First metasomal segment with lateral, longitudinal, brown stripe. Pygostyle and apex of ovipositor sheaths brown.

Head 1.2-1.3 times wider than high. Lateral ocellus nearer to eye margin than to median ocellus (OOL/LOL 0.45-0.6). Scrobal impression glabrate. Interantennal projection small, with slight but noticeable longitudinal medial ridge. Subocular sulcus present, complete, but faint and hard to see. Vertex around ocelli reticulate to elongate reticulate, rest of head elongate reticulate to imbricate.

Antenna (fig.69) with scape 4.6-5.35 times longer than wide. Pedicel 1.4-2.0 times longer than wide. A1 shorter, narrower than A2. F1 wider than long, noticeably shorter (about half the length) than F2. F2 longer than wide, as long as or longer than F3. F3-F6 decreasing in length distally, F6 subquadrate. Club 1.9-2.35 times longer than wide.

Mesosoma dorsally reticulate. Propodeum lightly sculptured, glabrate to imbricate medially, imbricate to reticulate laterally. Mesopleuron elongate reticulate to imbricate. Sternopleural suture not reaching anterior margin of mesopleuron. Mesopleural suture very faint, barely indicated.

Wings hyaline, veins light brown. Marginal fringe not reaching apex of wing. Basal cell with 10-18 setae. CC/MV 2.0-2.2, MV/PMV 1.9-2.25, MV/SV 1.6-1.8, PMV/SV 0.8-0.9.

Metasoma with T2-T4 reticulate dorsally, remainder of metasoma imbricate.

MALE. Length 1.4 mm. Color as in female except: frons with two yellow spots bordering eye margin; scape brown with longitudinal white to yellow stripe ventrally; pedicel brown, yellow apically; funicular segments dusky to brown; club yellow, dusky basally; metasoma brown dorsally, pink to

orange ventrally. Frons with transverse furrow extending from eye margin to scrobal impression at level halfway between torulus and median ocellus. F1-F4 with long rami, rami decreasing slightly in length distally. F1-F5 increasing in length distally, F6 noticeably shorter than F5.

DISTRIBUTION. USA: Arizona, Texas.

BIOLOGY AND HOSTS. Collected sweeping *Acacia constricta* (Fabaceae; Mimosoidea) (voucher specimen of plant in UCR Herbarium, #27358).

MATERIAL EXAMINED. Holotype ♀, USA, Arizona, Cochise Co., 1 mi. NE Portal, 25.viii.1982, J. LaSalle (USNM, point).

20♀, 1♂ paratypes. USA, Arizona: as holotype (4♀, USNM; 1♀, LAS); Cochise Co., 1.0 mi. E. Portal, 4700', 31.vii.1982, G. A. P. Gibson, sweeping flowering *Acacia constricta* (3♀, CNC. 1♀: BMNH, AEI, MLP, TAMU); Cochise Co., 1 mi. NE Portal, 28.viii.1979, C.W. Melton (1♀, LAS); Cochise Co., 5.7 mi E. Portal, 12.ix.1978, J. LaSalle (2♀, UCR); Pima Co., 4 mi. S. Robles Junction, 26.viii.1979, J. LaSalle (1♂, USNM). USA, Texas: Culberson Co., 3.6 mi. S. Pine Springs, old Guadalupe Pass Rd., nr. Guadalupe Springs, 5200', 20-22.vii.1982, G.A.P. Gibson, sweeping flowering *Acacia constricta* (4♀, CNC); Brewster Co., Big Bend National Park, 12.5 mi. SE Panther Jct., 2500', 23-26.vi.1982, G.A.P. Gibson (1♀, CNC).

ETYMOLOGY. Named in memory of a good friend.

***Tanaostigmodes tychii* Ashmead**
Figures 73, 173.

Tanaostigmodes tychii Ashmead, 1896:19. Holotype ♀, USA, California, San Bernardino (USNM, #3469) [examined].

DIAGNOSIS. Females of *T. tychii* are distinguished from other species of *Tanaostigmodes* by the following characters: scape 2.75-2.95 times longer than wide, with flattened ventral expansion (fig.73); interantennal projection present, small; notauli complete; scutellum reticulate; F1 as long as or longer than F2 (fig.73); marginal fringe not extending to apex of forewing; head and body brown; subocular sulcus present; ventral expansion of scape uniformly rounded, widest medially (fig.73).

FEMALE. Length 2.1-2.9 mm. Head brown to dark brown. Face may have light brown to yellow markings ventral to toruli and bordering oral fossa. Gena may have light brown to yellow markings ventral to eye margin and bordering oral fossa. Scape light brown to brown; pedicel through F6 brown; club light yellow to white, may be dusky basally. Dorsum of mesosoma black, remainder of mesosoma brown to dark brown or black. Prepectus and mesopleuron usually with light brown to yellow markings anterodorsally. Tegula light brown to dark brown. Mesosternum with

light brown to yellow markings posteriorly. Legs brown, tibiae and femora with light to yellow markings basally and apically. Tarsi light brown to yellow or white. Metasoma brown to dark brown. Metasomal terga with transverse orange markings anteriorly, but due to telescoping of metasomal segments these markings are only seen in specimens with extremely distended metasomas. Ovipositor sheaths light brown to yellow.

Head 1.25-1.35 times wider than high. Lateral ocellus usually slightly closer to median ocellus than to eye margin (OOL/LOL 1.0-1.15). Scrobal impression reticulate. Interantennal projection small, may have sharp median carina dorsally. Subocular sulcus present, complete. Frons and face reticulate; occiput and gena reticulate to imbricate.

Antenna (fig.73) with scape 2.75-2.95 times longer than wide, with flattened ventral expansion. Pedicel 1.1-1.4 times longer than wide. A1 shorter and narrower than A2. F1 longer than wide; funicular segments decreasing in length distally; F6 slightly wider than long. Club 1.75-2.55 times longer than wide.

Mesosoma dorsally reticulate. Propodeum reticulate. Mesopleuron reticulate. Sternopleural suture not reaching anterior margin of mesopleuron, faintly connected to mesopleural suture.

Wings hyaline, veins light brown to yellow. Marginal fringe not reaching apex of wing. Basal cell with 17-28 setae. CC/MV 2.65-3.1, MV/PMV 1.55-1.9, MV/SV 1.25-1.45, PMV/SV 0.7-0.9.

Metasoma reticulate dorsally; reticulate to imbricate ventrally.

MALE. Unknown.

DISTRIBUTION. USA: California, Arizona; MEXICO: Baja California.

BIOLOGY AND HOSTS. From galls on *Acacia greggii* (Fabaceae; Mimosoidea). The gall formed is a thin, oval, non-detachable stem gall (fig.173), 3-7 mm in width, 6-10 mm in length. Several galls can be present very close to one another causing a larger swelling. This type of gall is pictured in Felt (1940: plate 2(1), p.49). In the caption he erroneously lists this gall as being formed by *Tanaostigmodes howardii* on *Mimosa biuncifera*, however in the text (p. 272-3) he correctly lists the plant as *Acacia greggii*. *Tanaostigmodes howardii* does not form this type of gall; and this picture depicts a gall formed by either *T. tychii* or *T. tescus*.

The host record for the holotype (a parasite of a curculionid on lupine) is almost certainly erroneous. Records from *Mimosa* or *Prosopis* (Fabaceae; Mimosoidea) may also be in error.

MATERIAL EXAMINED. Holotype ♀, USA, California, San Bernardino, D.W. Coquillett (USNM, point).

Non-type material. USA, California: San Bernardino Co., May (1♀, USNM); Riverside Co., Andreas Canyon, 19.iv.1979, G. Gordh, reared from *Acacia greggii* galls (4♀, UCR. 1♀: BMNH, CNC, LAS); Riverside Co., Cabazon, 9.iv.1971, D. Hendrickson & R. Gill (3♀, CDAS). USA, Arizona: Pima Co., Tucson, 1935, L.H. Weld, galls on *Mimosa* (2♀, USNM); Pima Co., Tucson, gall on *Acacia greggii* (6♀, USNM). MEXICO, Baja California:

8 km. N., 2 km. W. Catavina, 4-5.iv.1981, J. LaSalle, reared from gall on *Acacia greggii* (1♀, UCR).

Tanaostigmodes koebelei LaSalle, sp. n.

Figure 74.

DIAGNOSIS. Females of *T. koebelei* are distinguished from other species of *Tanaostigmodes* by the following characters: scape 2.85-3.05 times longer than wide, with flattened ventral expansion apically (fig.74); interantennal projection present; notauli complete; scutellum reticulate; F1 as long as or longer than F2 (fig.74); marginal fringe extending to apex of forewing; head and body brown; subocular sulcus absent; ventral expansion of scape not uniformly rounded, widest in apical half (fig.74).

FEMALE. Length 2.8-3.1 mm. Head and body dark brown to black, except scrobal impression yellow laterally. Scape yellow with translucent ventral expansion apically, remainder of antenna brown to dark brown. Coxae apically, trochanters and femora basally light brown to yellow; femora mainly brown; knees, tibiae and tarsi light brown to yellow; tibiae may appear orange. Ovipositor sheaths light brown to yellow, dark apically.

Head 1.15-1.3 times wider than high. Placement of ocelli variable (OOL/LOL 0.9-1.5). Scrobal impression reticulate to imbricate with strong, dorsally pointed interantennal projection. Subocular sulcus absent. Frons, face, and vertex reticulate to imbricate, with scattered, small, setiferous punctures; remainder of head imbricate.

Antenna (fig.74) with scape 2.85-3.05 times longer than wide, with flattened ventral expansion apically. Pedicel 1.4-1.7 times longer than wide. A1 subequal in length and width to A2. F1 longer than wide; F2 slightly longer than F1; funicular segments decreasing slightly in length distal to F2; F6 subequal in length and width. Club 1.85 times longer than wide.

Mesosoma dorsally reticulate. Propodeum imbricate to reticulate. Mesopleuron reticulate dorsally and anteriorly, reticulate to imbricate or glabrate posteriorly and ventrally. Sternopleural suture not reaching anterior margin of mesopleuron, connected to very faint mesopleural suture.

Wings hyaline, veins brown. Forewing with marginal fringe extending to apex of wing. Basal cell with 40-45 setae CC/MV 2.45-2.6, MV/PMV 1.55-1.75, MV/SV 1.5-1.6, PMV/SV 0.9-1.0.

Metasoma reticulate to imbricate, T2 glabrate basally.

MALE. Unknown.

DISTRIBUTION. MEXICO: Morelos.

BIOLOGY AND HOSTS. Unknown.

MATERIAL EXAMINED. Holotype ♀, MEXICO, Morelos, A. Koebele (USNM, point).

1 ♀ paratype. As holotype (1 ♀, UCB).

ETYMOLOGY. Named for the collector, Albert Koebele.

Tanaostigmodes tetartus Crawford

Tanaostigmodes tetartus Crawford, 1911:443. Lectotype ♀ (present designation), WINDWARD ISLANDS, West Indies, Barbados (USNM, #13661) [examined].

Tanaostigmodes americanus Girault, 1913:67 (as *Taneostigmodes americana*). Syntypes, PARAGUAY, San Bernardino (2♀, ZHMB) [1♀ examined]. **Syn. n.**

DIAGNOSIS. Females of *T. tetartus* are distinguished from other species of *Tanaostigmodes* by the following characters: scape 2.8-3.1 times longer than wide, with flattened ventral expansion; interantennal projection present, small; notauli complete; scutellum reticulate; F1 as long as or longer than F2; head and body lemon yellow; marginal fringe extending to apex of forewing; subocular sulcus absent; ventral expansion of scape uniformly rounded, widest medially.

FEMALE. Length 1.55-2.3 mm. Head and body yellow. Dark spots may be present adjacent to each ocellus, and at dorsal edge of scrobal impression. Funicle may be dusky, dorsum of metasoma with large, medial dusky area.

Head 1.15-1.25 times wider than high. Lateral ocellus nearer to eye margin than to median ocellus (OOL/LOL 0.5-0.55). Scrobal impression reticulate. Interantennal projection small, with sharp median carina dorsally. Subocular sulcus absent. Frons and face reticulate, occiput and gena reticulate to imbricate.

Antenna with scape 2.8-3.1 times longer than wide, with flattened ventral expansion. Pedicel 1.3-1.6 times longer than wide. Funicular segments subquadrate. Club 1.65-2.0 times longer than wide.

Mesosoma dorsally reticulate. Notauli complete, although they may appear to be incomplete as they are darkened anteriorly and not posteriorly and they are more shallow and harder to see posteriorly than anteriorly. Propodeum reticulate. Mesopleuron reticulate. Sternopleural suture not reaching anterior margin of mesopleuron, not connected to mesopleural suture.

Wings hyaline, veins light brown. Marginal fringe extending to apex of wing. Basal cell with 15-23 setae. CC/MV 2.05-2.35, MV/PMV 1.65-1.9, MV/SV 1.45-1.55, PMV/SV 0.8-0.95.

Metasoma reticulate dorsally, reticulate to imbricate ventrally.

MALE. Unknown.

DISTRIBUTION. WINDWARD ISLANDS: Barbados; PARAGUAY.

BIOLOGY AND HOSTS. Unknown. The *T. tetartus* type series is labeled as being collected "on *Hibiscus*", however this record should be considered doubtful without further records.

MATERIAL EXAMINED. Lectotype ♀ (*Tanaostigmodes tetartus*), WINDWARD ISLANDS, Barbados, [West Indies], 25.v.1909, H.A. Ballou, on *Hibiscus* (USNM, point).

Paralectotypes (*Tanaostigmodes tetartus*). As lectotype (2♀, USNM). Crawford states that this species was described from 4 specimens, but there are only 3 in the USNM.

Syntype ♀ (*Tanaostigmodes americanus*). PARAGUAY, San Bernardino, K. Fiebrig (ZMHB). A second ♀ syntype in ZMHB was not examined. A lectotype is not designated as the examined specimen is in poor condition.

COERULEUS Group

Females of the Coeruleus Group are distinguished from other *Tanaostigmodes* by the following combination of characters: head and body with predominantly metallic coloration; A2 large, quadrate, almost as long as wide (fig.76) (a character unique to this group); scape 5.25-6.0 times longer than wide, without ventral expansion; notauli complete; marginal fringe not reaching apex of forewing; scutellum longitudinally elongate reticulate.

This group contains the single species, *T. coeruleus*.

Tanaostigmodes coeruleus (Kieffer & Jörgensen), comb. n.
Figures 76,174.

Dendrosema coeruleum Kieffer & Jörgensen, 1910:420. Type material (♀ ♂), ARGENTINA [?lost].

DIAGNOSIS. Females of *T. coeruleus* are distinguished from other species of *Tanaostigmodes* by the following characters: head and body dark metallic blue to blue green except dorsum of metasoma and ovipositor sheaths yellow to dusky yellow; A2 large, quadrate, almost as long as wide (fig.76); scape 5.25-6.0 times longer than wide, without ventral expansion; notauli complete; marginal fringe not reaching apex of forewing; scutellum longitudinally elongate reticulate.

FEMALE. Length 1.95-2.75 mm. Head and body dark metallic blue to blue green, except dorsum of metasoma and ovipositor sheaths yellow to dusky yellow. Scape through F1 black to dark metallic blue, except pedicel apically and sometimes F1 apically yellow to light brown; F2-club light yellow to white. Legs dark metallic blue with some small light brown to yellow markings. Tarsi light brown to brown.

Head 1.2-1.4 times wider than high. Lateral ocellus nearer to eye margin than to median ocellus (OOL/LOL 0.6-0.85). Scrobal impression reticulate, glabrate laterally. Interantennal projection prominent, pointed dorsally. Subocular sulcus present, incomplete. Frons and face reticulate; remainder of head elongate reticulate to imbricate.

Antenna (fig.76) with scape 5.25-6.0 times longer than wide. Pedicel 1.4-1.7 times longer than wide. A2 large, almost as long as wide, about twice as long as A1. F1 longer than wide, shorter than F2; F2 longest funicular segment; F3-F6 decreasing in length distally, F5 and F6 about equal in length and width. Club 1.6-2.15 times longer than wide.

Mesosoma with mesoscutum imbricate to reticulate; scutellum reticulate, the cells longitudinally elongate. Propodeum lightly imbricate. Mesopleuron finely reticulate to elongate reticulate dorsally, imbricate to strigulate ventrally. Sternopleural suture not reaching anterior margin of mesopleuron, not connected to mesopleural suture.

Wing hyaline, veins light brown to yellow. Marginal fringe not reaching apex of wing. Basal cell with 24-46 setae; these setae light yellow to white and difficult to see. CC/MV 1.95-2.4, MV/PMV 1.85-2.2, MV/SV 1.75-2.2, PMV/SV 0.8-1.05.

Metasoma reticulate dorsally, reticulate to imbricate ventrally.

MALE. Length 1.7-2.15 mm. Color similar to female except dorsum of metasoma brown with slight metallic tinge; metasomal terga with transverse yellow to orange markings anteriorly, but due to telescoping of metasomal segments these markings only seen in specimens with metasoma distended. Funicular segments dusky to brown, F2-F6 white to light yellow dorsally. Club white to light yellow. Scape with small flattened ventral expansion, 2.5-2.85 times longer than wide. F1-F5 with long rami. R1-R3 subequal in length, R4 and R5 progressively shorter; R5 about half the length of F5. F6 dorsally pointed apically. F1-F4 increasing in length distally; F5 subequal in length to F4; F6 noticeably shorter than F5.

DISTRIBUTION. ARGENTINA: Cordoba, Catamarca, Tucuman, Santa Fe; PARAGUAY.

BIOLOGY AND HOSTS. From galls on *Prosopis alba*, *P. alpataco*, *P. chilensis*, and *P. nigra* (Fabaceae; Mimosoidea). Galls are globose, multi-chambered, 10-25 mm in diameter, attached laterally to the stem (fig.174). The original description records this species as a parasite of *Eschaterocerus niger* (Hymenoptera; Cynipidae). *T. coeruleus* reared from *Prosopis alba* and *P. nigra* by A. Teran in Tucuman, Argentina were sent to me with all the Hymenoptera that issued from these galls, including many specimens of a species of *Eschaterocerus* (far more than the number of *T. coeruleus* that emerged). Weld (1952) lists *Eschaterocerus* as a gall former and not an inquiline, and the association between this cynipid and *T. coeruleus* remains unknown.

MATERIAL EXAMINED. Type material not examined, probably lost.

Non-type material. **ARGENTINA, Cordoba:** W.M. Davis, from gall on algarobo (32♀, 23♂, MCZ); Rt. 9, K851, S. of Ville de Maria, 6.xii.1967 (1♀, USNM); **ARGENTINA, Catamarca:** Andalgalá, 27.xi.1971, gall on *Prosopis chilensis* (1♀, 1♂, USNM); **ARGENTINA, Tucuman:** Ticucho, 11-1-81, A. Teran, reared from galls on *Prosopis nigra* (4♀, 3♂, IML. 1♀: TAMU, ANIC, QMB, PPRI, ZIL); Ticucho, 11-1-81, A. Teran, reared from galls on *Prosopis alba* (1♀, 1♂: IML, CNC, LAS, UCR, AEI); **ARGENTINA, Santa Fe:** Santa Fe, xi.1969, Pasqualini, gall on algarrobo (1♀, 1♂, MLP). **PARAGUAY:** Chaco, Nanawa, 30.x.1926, A. Pride (1♀, BMNH).

COMMENTS. Type material for this species was not examined (see discussion of Kieffer & Jörgensen's type material under Unplaced Species of New World Tanaostigmatidae). However, this name could be assigned to the material examined with confidence due to the distinct color pattern (found in no other tanaostigmatid), particularly as some of this material was reared from the same host as that given in the original description.

TRICOLOR Group

Females of the Tricolor Group are distinguished from other *Tanaostigmodes* by the following combination of characters: head and body with metallic coloration; scape 2.9-3.35 times longer than wide; marginal fringe extending past apex of forewing to postmarginal vein; scutellum reticulate; head distinctly wider than high, marginal vein less than twice as long as either postmarginal or stigmal vein.

This group contains the single species, *T. tricolor*.

Tanaostigmodes tricolor LaSalle, sp. n.

DIAGNOSIS. Females of *T. tricolor* are distinguished from other species of *Tanaostigmodes* by the following characters: head and mesosoma metallic green to black with metallic shine; scape 2.9-3.35 times longer than wide; marginal fringe extending past apex of forewing to postmarginal vein; scutellum reticulate; head distinctly wider than high, marginal vein less than twice as long as either postmarginal or stigmal vein.

FEMALE. Length 1.0-1.8 mm. Head from dark metallic green to black with metallic tinge. Scape brown, yellow basally. Pedicel brown mesally, yellow apically and laterally. Funicle brown; club light brown to yellow. Mesosoma dark metallic green to black with metallic tinge except prepectus anteriorly and ventrally, tegula, and dorsoapical spot on mesopleuron light brown to yellow. Coxae and legs yellow except hind coxa darkened dorsally. Metasoma yellow, with lateral, longitudinal line black with metallic tinge; dorsum of metasoma slightly darkened.

Head 1.1-1.3 times wider than high. Lateral ocellus nearer to eye margin than to median ocellus (OOL/LOL 0.6-0.8). Scrobal impression

glabrate. Interantennal projection present, pointed dorsally. Subocular sulcus present, complete, although faint and difficult to see ventrally. Face and frons ventrally reticulate; frons dorsally, vertex, occiput, and gena imbricate.

Antenna with scape 2.9-3.35 times longer than wide. Pedicel 1.35-1.7 times longer than wide. A1 and A2 subequal in length and width. F1 longer than wide; funicular segments decreasing slightly in length distally; F6 subequal in length and width. Club 2.1-2.3 times longer than wide.

Mesosoma dorsally reticulate. Propodeum lightly sculptured, reticulate to imbricate. Mesopleuron finely reticulate to elongate reticulate or strigulate dorsally, glabrate ventrally. Sternopleural suture not reaching anterior margin of mesopleuron, not connected to faint mesopleural suture.

Wings hyaline, veins light brown to yellow. Forewing with marginal fringe extending to postmarginal vein. Basal cell with 39-46 setae. CC/MV 1.7-2.05, MV/PMV 1.3-1.5, MV/SV 1.6-1.9, PMV/SV 1.05-1.25.

Metasoma reticulate to imbricate.

MALE. Length 1.05-1.5 mm. Coloration as in female except scape yellow except for brown spot apically; funicle and club concolorous, brown to light brown. Funicular segments subequal in length. F1-F5 with dorsal projections; projection tallest on F2 and F3, decreasing in height distally.

DISTRIBUTION. ARGENTINA: Cordoba.

BIOLOGY AND HOSTS. Label data states from prickly algarobo. The name algarobo probably refers to some species of *Prosopis* (Fabaceae; Mimosoidea).

MATERIAL EXAMINED. Holotype ♀, ARGENTINA, Cordoba, W.M. Davis, prickly algarobo (MCZ, point).

64♀, 17♂ paratypes. As holotype (45♀, 10♂, MCZ. 2♀, 1♂: USNM, BMNH, CNC, LAS, UCR, AEI, MLP. 1♀: TAMU, ANIC, QMB, PPRI, ZIL).

ETYMOLOGY. From the Latin *tri-*, meaning three, and *color*; referring to the predominantly green, black and yellow coloration.

VIRIDIS Group

Females of the Viridis Group are distinguished from other *Tanaostigmodes* by the following combination of characters: head and body with metallic green to blue coloration; marginal vein long in relation to postmarginal and stigmal veins, over 2.5 times as long as either vein (fig.147); head nearly circular in frontal view, about equal in width and height (fig.44); scape 3.0-3.3 times longer than wide; marginal fringe not reaching apex of forewing.

This group contains the single species, *T. viridis*.

Tanaostigmodes viridis LaSalle, sp. n.

Figures 44, 147.

DIAGNOSIS. Females of *T. viridis* are distinguished from other species of *Tanaostigmodes* by the following characters: head and body metallic green to blue; marginal vein long in relation to postmarginal and stigmal veins, over 2.5 times as long as either vein (fig. 147); head nearly circular in frontal view, about equal in width and height (fig. 44); scape 3.0-3.3 times longer than wide; marginal fringe not reaching apex of forewing.

FEMALE. Length 1.25-1.7 mm. Vertex and frons dorsally dark metallic green to blue; frons ventrally and face bright metallic green. Antenna brown with slight metallic tinge, except scape basally and club light yellow to white. Mesosoma and metasoma deep metallic green to blue. Fore and middle legs generally yellow; femora and tibiae may have brown coloration of varying size and intensity. Hind femur and hind tibia basally brown with metallic tinge. All tarsi white to yellow or light brown.

Head (fig. 44) nearly round in frontal view, 0.95-1.05 times wider than high. Lateral ocellus nearer to eye margin than to median ocellus (OOL/LOL 0.6-0.7). Scrobal impression glabrate. Interantennal projection very small. Subocular sulcus represented only by a small depression at ventral margin of eye. Head reticulate to imbricate.

Antenna with scape 3.0-3.3 times longer than wide. Pedicel 1.3-1.5 times longer than wide. A1 subequal in length and width to A2. All funicular segments subequal in length and width. Club 1.8-2.1 times longer than wide.

Mesosoma dorsally reticulate to imbricate. Propodeum lightly sculptured, imbricate to reticulate. Mesopleuron lightly sculptured, reticulate to imbricate. Sternopleural suture not reaching anterior margin of mesopleuron, connected to very faint mesopleural suture.

Wings hyaline, veins light brown. Setae on wings pale yellow to white. Forewing with marginal fringe not reaching apex of wing. Basal cell with 12-18 setae. Postmarginal vein and stigmal vein short in relation to marginal vein (fig. 147). CC/MV 2.05-2.1, MV/PMV 2.85-3.4, MV/SV 2.8-3.1, PMV/SV 0.8-1.1.

Metasoma reticulate.

MALE. Unknown.

DISTRIBUTION. ARGENTINA: La Pampa.

BIOLOGY AND HOSTS. From galls on *Prosopis strombulifera* (Fabaceae; Mimosoidea).

MATERIAL EXAMINED. Holotype ♀, ARGENTINA, La Pampa, General Pico, 26.xi.1973, Williamson, galls on *Prosopis strombulifera* (MLP, point).

3♀ paratypes. As holotype (2♀, MLP; 1♀, USNM).

ETYMOLOGY. The Latin *viridis*, meaning green; referring to the characteristic green coloration.

Unplaced Species in the Genus *Tanaostigmodes*

Tanaostigmodes mayri Ashmead

Tanaostigmodes mayri Ashmead, 1900:262. Holotype ♂, WINDWARD ISLANDS, Grenada, Mount Gay Estate (BMNH, #5.1039) [examined].

FEMALE. Unknown.

MALE. Length 1.1 mm. Head yellow; occiput, vertex and scrobal impression black. Mesosoma and metasoma yellow laterally and ventrally, dark brown to black dorsally except metanotum yellow medially. Legs yellow.

Head 1.15 times wider than high. Lateral ocellus nearer to eye margin than to median ocellus (OOL/LOL 0.65). Frons with transverse furrow from eye margin to scrobal impression at level halfway between torulus and median ocellus. Subocular sulcus either incomplete or complete but very faint ventrally. Head reticulate to imbricate.

Antenna with scape 3.0 times longer than wide. Pedicel 1.35 times longer than wide. Funicular segments with short, dorsal projections extending the length of each segment. Dorsal projections on F1-F3 subequal in height; projections on F4-F6 decreasing in height distally. Club 2.15 times longer than wide.

Mesosoma with mesoscutum reticulate; scutellum reticulate to imbricate. Propodeum imbricate medially, callus very lightly sculptured to glabrate. Mesopleuron lightly reticulate anteriorly, glabrate posteriorly. Sternopleural suture not reaching anterior margin of mesopleuron, not connected to mesopleural suture. Mesopleural suture short, only represented dorsally.

Wings hyaline, veins light brown to yellow. Forewing with marginal fringe extending to apex of wing. Basal cell with 13-18 setae. CC/MV 2.35, MV/PMV 1.35, MV/SV 1.55, PMV/SV 1.15.

Metasoma reticulate to imbricate. Terga with transverse row of setae near posterior margin.

DISTRIBUTION. WINDWARD ISLANDS: Grenada.

BIOLOGY AND HOSTS. Unknown.

MATERIAL EXAMINED. Holotype ♂, WINDWARD ISLANDS, Grenada, Mount Gay Est., (Leeward side), H.H. Smith (BMNH, point).

This species known only from the holotype.

DISCUSSION. This species cannot be placed as the female is yet unknown.

Genus *MINAPIS* Brèthes

Minapis Brèthes, 1916:422. Type species *Minapis nigra* Brèthes, 1916, by monotypy.

DIAGNOSIS. Females of the genus *Minapis* are distinguished from other tanaostigmatids by the following characters (all of which are unique to this genus): forewing strongly patterned, with contrasting dark brown and hyaline areas (fig.131); propodeum long (at least 6 times as long as diameter of spiracle), and without median carina or plicae (fig.115); metasoma with T1 (petiole) clearly visible, T2 longer than remaining segments combined (fig.157); scape long and slender, about 7 times as long as wide (fig.84).

Males are recognizable because they also have the lengthened propodeum without a median carina or plicae, and a distinctly visible petiole. They lack patterned wings. Funicular segments have dorsal projections.

FEMALE. Without metallic coloration or modified setae.

Head reticulate to imbricate. Interantennal projection very small to absent. Subocular sulcus complete.

Antenna with scape long and slender, about 7 times longer than wide. F1 longer than wide; funicular segments decreasing in length distally; F6 subequal in length and width.

Mesosoma reticulate to imbricate dorsally. Notauli complete. Propodeum very long, length at spiracle about 6 times the diameter of spiracle.

Forewing strongly patterned with contrasting dark brown and hyaline areas. Stigmal vein strong, distinctly curved. Hind wing with single dark brown spot near base of wing.

Metasoma with T1 (petiole) clearly visible, wider than long. T2 long, longer than remaining segments combined.

MALE. Antenna without long rami. All funicular segments subequal in length; with short dorsal projection. Wings hyaline. Frons without transverse furrow.

DISCUSSION. *Minapis* is distinct from other tanaostigmatids due to the several unique characters given in the generic diagnosis. A few New World tanaostigmatids have the forewing slightly and uniformly infuscated, but such a distinct color pattern is found only in *Minapis*. Other tanaostigmatids may have the propodeum slightly to considerably lengthened, but only *Minapis* has a lengthened propodeum without plicae or a median carina. The metasomal characters, T1 (petiole) visible and T2 longer than the remaining metasomal segments combined, are unique to *Minapis*.

Minapis presently contains a single species, *M. nigra* Brèthes.

Minapis nigra Brèthes
Figures 51,84,115,131,157.

Minapis nigra Brèthes, 1916:422. Lectotype ♀ (present designation), ARGENTINA, Buenos Aires (MBR) [examined].

DIAGNOSIS. Females of *M. nigra* are distinguished from all other tanaostigmatids by the following characters: forewing strongly patterned, with contrasting dark brown and hyaline areas (fig.131); propodeum long (at least 6 times as long as diameter of spiracle), and without median carina or plicae (fig.115); metasoma with T1 (petiole) clearly visible, T2 longer than remaining segments combined (fig.157); scape long and slender, about 7 times as long as wide (fig.84).

FEMALE. Length 3.0-3.1 mm. [orig. descr. 2.5-3.5]. Head yellow to orange-brown; vertex and frons dorsally brown. Scape light brown, pedicel through F6 dark brown, club and dorsoapical spot on F6 light yellow to white. Mesosoma brown; pronotum laterally and prepectus light brown. Metasoma dark brown; T8 dorsally and ovipositor sheaths brown to light brown.

Head (fig.51) 1.15-1.2 times wider than high. Lateral ocellus nearer to median ocellus than to eye margin (OOL/LOL 1.2-1.3). Scrobal impression reticulate. Interantennal projection very small to absent. Subocular sulcus complete, although difficult to see as it nears oral fossa. Head reticulate to imbricate.

Antenna (fig.84) with scape 7.0-7.25 times longer than wide. Pedicel 1.4-1.5 times longer than wide. A2 subequal in width to, about twice as long as A1. F1-F3 longer than wide; F4-F6 decreasing slightly in length distally; F6 subequal in length and width. Club 1.5-1.6 times longer than wide.

Mesosoma dorsally reticulate to imbricate. Propodeum (fig.115) without median carina or plicae, lightly reticulate to imbricate, long, length at spiracle about 6 times the diameter of spiracle. Mesopleuron strigulate to reticulate dorsally, strigulate to glabrate ventrally. Sternopleural suture not reaching anterior margin of mesopleuron, connected to mesopleural suture.

Forewing (fig.131) strongly patterned, with contrasting dark brown and hyaline areas. Hind wing hyaline with dark brown area near base of wing. Forewing with marginal fringe extending to apex of wing. Basal cell with 40-52 setae. CC/MV 1.95-2.1, MV/PMV 1.3-1.45, MV/SV 1.9-2.0, PMV/SV 1.4-1.5.

Metasoma (fig.157) reticulate to imbricate. T1 (petiole) clearly visible, wider than long. T2 long; longer than remaining segments combined.

MALE. Length 2.25-2.3 mm. Coloration as in female except T8 brown dorsally; wings hyaline. Funicular segments equal in length, each with dorsal projection. F1 widest, F2-F6 decreasing in width distally.

DISTRIBUTION. ARGENTINA: Buenos Aires.

BIOLOGY AND HOSTS. From galls on *Scutia buccifolia* (Rhamnaceae). The gall is large (up to the size of a fist), spherical, multi-chambered, and apparently laterally attached to the stem [from the original description].

MATERIAL EXAMINED. Lectotype ♀, ARGENTINA, Buenos Aires, iii.1915, galls on *Scutia buccifolia* (MBR, slide).

Paralectotypes. As lectotype (1 ♂, MBR; 1 ♀, 1 ♂, MLP; 1 ♀, 1 ♂, USNM).

Non-type material. ARGENTINA, Buenos Aires: Tigre, iii.1964, Behr, from gall on *Scutia buccifolia* (2 ♂, MLP).

COMMENTS. The specimen designated as lectotype was so designated because: it and the paralectotype male on the same slide are the only specimens actually marked by Brèthes as types and are presumably the specimens he intended to be types; and it is the only female in MBR (where Brèthes intended his types to be). The paralectotypes in the USNM and MLP are in better condition.

Genus *TANAOSTIGMA* Howard

Tanaostigma Howard, 1890:147-148. Type species *Tanaostigma coursetiae* Howard, 1890, by monotypy.

Trichencyrtus Ashmead, 1904: 291,292,392,495. Type species *Trichencyrtus chapadae* Ashmead, 1904, by original designation. Syn. n.

DIAGNOSIS. Females of the genus *Tanaostigma* are distinguished from other tanaostigmatids by the following unique characters: head and body with squamiform setae (figs.38-40,89); all funicular segments wider than long (figs.77-79); stigmal vein slender, straight or only slightly curved, and perpendicular or nearly so to postmarginal vein (fig.130). Unfortunately, none of these characters are found in every species in this genus (see discussion). In all species the scape is 1.5-2.5 times longer than wide with flattened ventral expansion (figs.77-80), however this character is seen in many species of *Tanaostigmodes*.

Males have 4-5 funicular rami (fig.6), sometimes frons with transverse furrow halfway between torulus and median ocellus.

FEMALE. Color usually mostly black to dark brown, sometimes with metallic tinge. Head usually with transverse white to yellow stripe on both face and lower frons. Head and body usually with squamiform setae.

Head usually reticulate to imbricate. Scrobal impression shallow, without well defined margin. Interantennal projection present and small or absent. Subocular sulcus complete

Antenna with scape 1.5-2.5 times longer than wide, with flattened ventral expansion. Funicular segments usually all wider than long; F1 or F2 often the widest funicular segment, with funicle gradually becoming narrower distally.

Mesosoma dorsally usually reticulate. Notauli complete. Scutellum often with lateral glabrate area. Propodeum variable, often with one or more medial carina. Mesopleuron usually reticulate. Middle tibia often with longitudinal carina on dorsal margin.

Wings hyaline, usually with slender, delicate veins. Stigmal vein usually straight or only slightly curved, and perpendicular or nearly so to postmarginal vein.

Metasoma usually reticulate. Posterior margin of T2-T4 usually with medial incision. Ovipositor slightly exserted.

MALE. Antenna with 4-5 long funicular rami. Funicular segments increasing in length distally. F6 longest funicular segment in species with 5 rami, shorter than F5 in species with 4 rami. Frons often with transverse furrow about halfway between torulus and median ocellus.

DISCUSSION. Several characters are used to define *Tanaostigma*, however none of them is found in all members. The two best characters are the presence of white squamiform setae on the head and body (figs.38-40,89), and the antenna with all funicular segments distinctly wider than long and more or less laterally compressed (figs.77-79). Neither of these characters are seen in other Tanaostigmatidae, and they are synapomorphies used to define this genus. Unfortunately, both undergo reversals. *T. glabrum* and *impilum* have no squamiform setae, *T. slossonae* has a funicle which is cylindrical or only very slightly laterally compressed, with some of the funicular segments only slightly wider than long or subequal in length and width (fig.80). Other characteristics of this genus are: scape 1.5-2.5 times longer than wide and with flattened ventral expansion (figs.77-80); all species except *stanleyi* have a medial incision on the posterior margin of T2-T3 (fig.163), and have the stigmal vein slender, straight or only slightly curved, and perpendicular or nearly so to the postmarginal vein (fig.130); the scutellum is reticulate with a lateral glabrate area (fig.96) in all species except *stanleyi* and *bennetti*, which have the scutellum entirely reticulate (fig.95), and *glabrum* and *impilum* which have the entire posterior half of the scutellum glabrate, and the anterior half glabrate to coriaceous.

Although *T. stanleyi* has several striking autapomorphs, it is considered to be the most primitive member of this genus. It possesses squamiform setae and a flattened funicle, however it lacks two characters found in all other members of this genus: the slender, almost straight stigmal vein, and a medial incision on the posterior margin of T2-T3. It also, together with *bennetti* (which is considered to be the next most primitive member of the genus), lacks the lateral glabrate area on the scutellum which is seen in most other species.

The remaining species form three groups. *T. glabrum* and *impilum* lack squamiform setae (considered a reversal), and have the scutellum lightly sculptured to glabrate anteriorly and completely glabrate posteriorly, so that it is not certain whether they once had lateral glabrate areas and lost them or they never had them. *T. slossonae*, *gahani* and *plaumanni* lack squamiform setae dorsally on the pedicel, and have scattered, minute punctures on the face (fig.40) (these characters difficult to see).

Additionally, males of *slossonae* and *gahani* (unknown for *plaumanni*) are the only *Tanaostigma* males without a transverse furrow on the frons at a level halfway between the toruli and median ocellus. *T. coursetiae*, *chapadae*, and *lobo* have squamiform setae dorsally on the pedicel, and lack minute punctures on the face.

T. albosquamatum could not be placed, as it is known only from the description. However, the male is described as having 5 funicular rami, a character only known in *stanleyi* and *bennetti*; all other *Tanaostigma* have 4 funicular rami.

Key to New World Species of *Tanaostigma*
(Based on females)

- 1 Squamiform white setae present on head and body (fig.38-40,89).
Scutellum reticulate, usually with lateral glabrate areas (fig.95-96).
..... 3
- 1' Squamiform white setae absent. Scutellum glabrate to coriaceous.
..... 2
- 2(1) Scutellum entirely glabrate. Thorax dark brown, without white
markings.
..... *glabrum*, sp. n. (p.101)
- 2' Scutellum coriaceous anteriorly, glabrate posteriorly. Thorax dark
brown with the following white markings: transverse stripe on
posterior margin of pronotum, prepectus dorsally, tegula
anteromedially, longitudinal stripe on dorsal margin of mesopleuron
in anterior half.
..... *impilum*, sp. n. (p.102)
- 3(1) Forewing with many large, dark, modified setae, giving the wing a
patterned appearance (fig.129). Pleural regions with orange to pink
markings. Posterior margin of T2-T4 without medial incision
(fig.162).
..... *stanleyi*, sp. n. (p.97)
- 3' Forewing setae normal, unmodified (fig.130). Pleural regions black to
brown, at most with longitudinal white line on dorsal margin of
mesopleuron. Posterior margin of T2-T4 with medial incision
(fig.163).
..... 4
- 4(3) Propodeum with squamiform setae present medially between
spiracles (fig.114). Scutellum without lateral glabrate area.
..... *bennetti*, sp. n. (p.99)
- 4' Propodeum without squamiform setae between spiracles. Scutellum
with lateral glabrate area (fig.96).
..... 5

- 5(4) Mesopleuron with complete, longitudinal white stripe on dorsal margin.
..... 6
- 5' Mesopleuron without white stripe, or with incomplete, longitudinal white stripe on dorsal margin which is no longer than half the length of mesopleuron.
..... 8
- 6(5) Frons with longitudinal white stripe bordering eye margin; occiput with transverse white stripe posterior to ocelli.
..... *coursetiae* Howard (p.108)
- 6' Frons without white stripe bordering eye margin; occiput without white stripe posterior to ocelli.
..... 7
- 7(6) Body black, antenna black, hind femur black to dark brown. Hind femur with subapical tooth ventrally (fig.158). All funicular segments wider than long (fig.79).
..... *gahani* (Gomes) (p.104)
- 7' Body brown, antenna brown with light brown to yellow ventral expansion of scape, hind femur light brown to yellow. Hind femur without tooth (fig.159). Some funicular segments may be subequal in length and width (fig.80).
..... *slossonae* (Crawford) (p.106)
- 8(6) Mesopleuron with longitudinal white or yellow stripe on dorsal margin in anterior half of sclerite. F2 distinctly wider than F6 (fig.78).
..... *plaumanni*, sp. n. (p.103)
- 8' Mesopleuron entirely black. F2 subequal in width to following segments.
..... 9
- 9(8) Median ocellus bordered by a small white spot. Humeral plate with large black seta in addition to squamiform white setae (fig.121). Metapleuron small but visible.
..... *chapadae* (Ashmead) (p.112)
- 9' Median ocellus not bordered by white spot. Humeral plate without large black seta (fig.122). Metapleuron not visible.
..... *lobo*, sp. n. (p.110)

***Tanaostigma stanleyi* LaSalle, sp. n.**

Figures 28,38,95,103,108,129,162.

DIAGNOSIS. Females of *T. stanleyi* are distinguished from other *Tanaostigma* (and all tanaostigmatids) by the following unique characters: forewing with strong, modified setae which give wing a patterned

appearance (figs.28,129); the striking coloration with pink, orange and white on the pleural regions and face. Additionally, the stigmal vein is strongly curved (fig.129); scutellum lacks laterate glabrate area (fig.95); posterior margin of T2-T4 without medial incision (fig.162).

FEMALE. Length 1.1-1.95 mm. Head and body black with extensive pink to orange and white markings on the head, antenna, mesosoma, legs and metasoma.

Head (fig.38) 1.2-1.25 times wider than high. Lateral ocellus closer to eye margin than to median ocellus (OOL/LOL 0.5-0.7). Scrobal impression shallow, reticulate. Interantennal projection small. Subocular sulcus complete. Head reticulate.

Antenna with scape 2.05-2.3 times longer than wide, with flattened ventral expansion. Pedicel 1.1-1.3 times longer than wide. A1 about half as long and slightly narrower than A2. All funicular segments wider than long, slightly laterally compressed; F1 and F2 widest, decreasing in width to F6. Club 1.45-1.75 times longer than wide, narrower than funicle.

Mesosoma dorsally minutely reticulate, scutellum (fig.95) without lateral glabrate area. Propodeum (fig.103) glabrate to reticulate without median carina. Mesopleuron (fig.108) reticulate. Sternopleural suture fused with mesopleural suture. Metapleuron easily visible. Middle tibia without a longitudinal carina on dorsal margin.

Wings hyaline; forewing (fig.129) with patterned appearance due to numerous large, modified, dark setae. Proximal portion of submarginal vein, marginal vein and postmarginal vein white; submarginal vein distally and stigmal vein brown. Stigmal vein strong, distinctly curved. Marginal fringe absent except for a few setae on posterior margin of wing. CC/MV 2.2-2.65, MV/PMV 1.85-2.15, MV/SV 1.45-1.6, PMV/SV 0.65-0.8.

Metasoma (fig.162) reticulate. T2-T5 with weak medial line. Posterior margin of T2-T4 straight, without medial incision.

MALE. Length 1.0-1.3 mm. Head black with most of face pink; pink spots on gena bordering eye near ventral margin; on frons bordering eye at level of torulus; on frons at level of transverse furrow; adjacent to median ocellus. Scape with pink to orange spot basally. Mesosoma black; prepectus pink anterodorsally; tegula pink anteriorly. Coxae black, pink ventrally; legs mottled, pink, orange, yellow, brown. Metasoma brown dorsally, pink ventrally. No squamiform setae. Frons with transverse furrow about equidistant between torulus and median ocellus. Antenna with 5 funicular rami on F1-F5; rami decreasing in length distally. Funicular segments increasing in length to F6.

DISTRIBUTION. USA: Arizona, New Mexico, Texas; MEXICO: Sonora, Chihuahua.

BIOLOGY AND HOSTS. Collected sweeping *Acacia constricta* (Fabaceae; Mimosoidea) (voucher specimen in UCR Herbarium, #27358).

MATERIAL EXAMINED. Holotype ♀, USA, Arizona, Cochise Co., 1 mi. NE Portal, 28.viii.1979, C.W. Melton & J. LaSalle, sweeping *Acacia constricta* (USNM, point).

133♀, 79♂ paratypes. USA, Arizona: as holotype (9♀, 2♂, USNM); Cochise Co., 1 mi. NE Portal, 14.ix.1978, J. LaSalle, sweeping *Acacia constricta* (22♀, 1♂, USNM; 6♀, 3♂, LAS); Cochise Co., 5.7 mi. E. Portal, 12.ix.1978, J. LaSalle, sweeping *Acacia constricta* (5♀, 5♂ USNM. 2♀, 1♂: MLP, TAMU, ANIC, QMB, PPRI, ZIL); Cochise Co., 7.5 mi. E. Douglas, 15.ix.1978, J. LaSalle, sweeping *Acacia constricta* (3♀, 4♂, UCR); Cochise Co., 2.7 mi. E. Paradise, 12.ix.1978, J. LaSalle, sweeping *Acacia constricta* (6♀, 2♂, UCR); Cochise Co., 1.7 mi. W. Portal, 6.viii.1976, Saul & Suzy Frommer (1♀, UCR); Cochise Co., Portal, 2.v.1972, on *Acacia* (2♀, 6♂, AMNH; 1♀, 3♂, SWRS); Cochise Co., Portal, Southwest Research Station, 26.v.1981, M.E. Schauff (1♀, USNM); Pima Co., 4 mi. S. Robles Junction, 26.viii.1979, C.W. Melton & J. LaSalle, sweeping *Acacia constricta* (10♀, 34♂, USNM); Yavapai Co., 10 mi. S. Camp Verde, 8.viii.1969, G.W. Forister, on flowers of *Acacia constricta* (1♂, USNM). USA, New Mexico: Luna Co., 0.5 mi. S. Columbus, 13.ix.1978, J. LaSalle, sweeping *Acacia constricta* (2♀, 1♂, UCR). USA, Texas: Culberson Co., 3.6 mi. S. Pine Springs, Old Guadalupe Pass Rd., nr. Guadalupe Springs, 5200', 20-22 July 1982, G.A.P. Gibson, sweeping *Acacia constricta* (30♀, 7♂, CNC); Big Bend National Park, 19.vii.1977, L. Masner, lowland desert springs (1♀, CNC). MEXICO, Sonora: 40 km. N. Carbo, 22.vi.1981, J. LaSalle, sweeping *Acacia constricta* (voucher specimen of plant in UCR Herbarium, #24557) (15♀, 2♂, UCR. 3♀, 1♂: BMNH, AEI). MEXICO, Chihuahua: 3 mi. W. Santa Barbara, 22.vii.1967, R.C. Gardner, C.R. Kovacic & K. Lorenzen (1♀, UCD).

ETYMOLOGY. Named for my father, Stanley G. LaSalle.

***Tanaostigma bennetti* LaSalle, sp. n.**

Figures 48, 114.

DIAGNOSIS. Females of *T. bennetti* are distinguished from other *Tanaostigma* by the following characters: propodeum with squamiform setae medially between spiracles (fig.114) (a character unique to this species); scutellum without lateral glabrate area; head more or less triangular in frontal view (fig.48).

FEMALE. Length 2.9 mm. Black to dark metallic blue-green with white to light brown markings as follows: clypeus except ventral margin; maxillary and labial palpi; prepectus anterodorsally; segments 1-2 on middle tarsus, segments 1-3 on hind tarsus; T8 apically; ovipositor sheaths dorsally. Squamiform white setae as follows: face, frons, gena, occiput, dorsal margin of scape, pedicel dorsally, pronotum, mesoscutum, axilla, scutellum, prepectus, tegula, humeral plate, one seta just lateral to middle of metanotum, propodeum (fig.114) laterally and medially between spiracles, mesosomal sterna, coxae, femora, T2-T8.

Head (fig.48) 1.5 times wider than high, triangular in frontal view. Lateral ocellus nearer to median ocellus than to eye margin (OOL/LOL 1.9). Scrobal impression shallow. Interantennal projection small. Subocular sulcus complete. Frons reticulate; face, vertex, occiput and gena longitudinally reticulate.

Antenna with scape 2.0 times longer than wide, with flattened ventral expansion. All funicular segments wider than long, slightly laterally compressed; F2 widest, segments decreasing in width to F6. Club 1.15 times longer than wide, narrower than funicle.

Mesosoma dorsally reticulate, scutellum without lateral glabrate area. Propodeum (fig.114) without median carina, with plicae. Mesopleuron reticulate. Sternopleural suture not reaching anterior margin of mesopleuron, fused with mesopleural suture. Metapleuron reduced and sunken, barely visible. Middle tibia without a longitudinal carina on dorsal margin.

Wings hyaline, veins light brown. Stigmal vein slightly curved, at slightly less than right angle to postmarginal vein. Marginal fringe extending to postmarginal vein, very short as it nears postmarginal vein. Basal cell with 45-55 setae. CC/MV 2.2, MV/PMV 2.1, MV/SV 1.75, PMV/SV 0.85.

Metasoma short, 0.6 length of mesosoma, reticulate. T2-T5 with medial line. Posterior margin of T3 with deep medial incision equal to about half the length of the tergum. Posterior margin of T2, T4, and T5 with slight medial incision.

MALE. Length 1.55-2.35 mm. Black, tarsal segments 1 to 3 or 4 on all legs yellow to brown. Squamiform setae present as in female. Frons with transverse furrow about equidistant between torulus and median ocellus. Antenna with long rami on F1-F5; rami on F2-F4 subequal in length, rami on F1 and F5 slightly shorter. Funicular segments increasing in length distally, F6 twice as long as F5.

DISTRIBUTION. TRINIDAD.

BIOLOGY AND HOSTS. From gall on *Machaerium robinifolium* (Fabaceae; Faboidea).

MATERIAL EXAMINED. Holotype ♀, TRINIDAD, St. Augustine, 1.iv.1959, F.D. Bennett, from gall on *Machaerium robinifolium*. (USNM, point).

2♂ paratypes. TRINIDAD: as holotype (1♂, USNM); St. Augustine, St. George, 22.vi.1976, J.S. Noyes (1♂, BMNH).

ETYMOLOGY. Named for the collector of the holotype, Fred D. Bennett.

Tanaostigma glabrum LaSalle, sp. n.

Figure 6.

DIAGNOSIS. Females of *T. glabrum* are distinguished from other *Tanaostigma* by the following characters: head and body without squamiform setae (a character shared only with *impilum*); scutellum entirely glabrate; thorax dark brown, without white markings.

FEMALE. Length 0.95-1.25 mm. Brown to dark brown with white to light yellow markings as follows: face with wide transverse stripe which continues onto gena and occiput; frons with narrow transverse stripe from eye margin to scrobal impression at level slightly dorsal to torulus, connected to longitudinal stripe bordering scrobal impression for about half the distance from torulus to anterior ocellus; longitudinal stripe on dorsal part of interantennal projection; tarsal segments 1-4 on all legs; ovipositor sheaths.

Head 1.15-1.3 times wider than high. Lateral ocellus slightly nearer to median ocellus than to eye margin (OOL/LOL 1.1-1.15). Scrobal impression glabrate to slightly reticulate. Interantennal projection small, pointed apically. Subocular sulcus complete. Face elongate reticulate, frons coriaceous to glabrate.

Antenna with scape 1.85-2.0 times longer than wide, with flattened ventral expansion. Pedicel 1.55-1.65 times longer than wide. A1 slightly shorter and narrower than A2. All funicular segments wider than long, each successive segment slightly longer than preceding one. Club 1.25-1.85 times wider than long.

Mesosoma with mesoscutum transversely reticulate to coriaceous; scutellum and axilla glabrate to coriaceous; scutellum entirely glabrate over at least its posterior half. Propodeum lightly sculptured, without carinae, with prespiracular prominence. Mesopleuron lightly reticulate to glabrate. Sternopleural suture nearly reaching anterior margin of mesopleuron. Mesopleural suture indistinct or absent. Metapleuron not visible.

Wings hyaline, veins light brown. Forewing with stigmal vein straight, nearly perpendicular to postmarginal vein. Marginal fringe extending past apex of wing, sometimes as far as postmarginal vein. Basal cell with 15-19 setae. CC/MV 2.35-2.5, MV/PMV 3.1-3.6, MV/SV 1.8-2.0, PMV/SV 0.5-0.65.

Metasoma delicately reticulate. T2-T5 with median line. Posterior margin of T3 with deep medial incision equal to about half the length of tergum. Posterior margin of T2 and T4 with slight medial incision.

MALE. Length 0.8-0.95 mm. Brown, tarsal segments 1-4 on all legs yellow. Frons with transverse furrow at level halfway between torulus and median ocellus. Antenna (fig.6) with long rami on F1-F4; rami on F1-F3 about equal in length, rami on F4 slightly shorter. Funicular segments increasing in length to F5, F6 noticeably shorter than F5.

DISTRIBUTION. MEXICO: Tabasco, Guerrero.

BIOLOGY AND HOSTS. Unknown. Label data for the holotype indicates that this species is parasitic on a cecidomyiid, but this may just mean that the specimens were reared from a gall.

MATERIAL EXAMINED. Holotype ♀, MEXICO, Tabasco, 2.vi.1897, par. on cecid. (USNM, point).

2♀, 4♂ paratypes. MEXICO, Tabasco: As holotype (1♀, 4♂, USNM). MEXICO, Guerrero: Amula, 6000 ft., viii.1904, H.H. Smith (1♀, BMNH).

ETYMOLOGY. The Latin *glabrum*, which can mean both hairless and smooth; referring to the glabrate posterior half of the scutellum, and lack of squamiform setae.

Tanaostigma impilum LaSalle, sp. n.

DIAGNOSIS. Females of *T. impilum* are distinguished from other *Tanaostigma* by the following characters: head and body without squamiform setae (a character shared only with *glabrum*); scutellum coriaceous anteriorly, glabrate posteriorly; thorax dark brown with the following white markings: transverse stripe on posterior margin of pronotum, prepectus dorsally, tegula anteromedially, longitudinal stripe on dorsal margin of mesopleuron in anterior half.

FEMALE. Length 1.6 mm. Brown to dark brown with white to light yellow markings as follows: face with wide transverse stripe which continues onto gena and occiput; frons with narrow transverse stripe from eye margin to scrobal impression at level slightly dorsal to torulus, connected to longitudinal stripe bordering scrobal impression to median ocellus, and very thin longitudinal stripe bordering eye margin to vertex; mark on dorsal part of interantennal projection; small mark posterolateral of lateral ocellus; transverse stripe along posterior margin of pronotum; prepectus dorsally; tegula anteromedially; longitudinal stripe dorsally on mesopleuron in anterior half only; tarsal segments 1-4 on all legs.

Head 1.25 times wider than high. Lateral ocellus about equidistant from median ocellus and eye margin (OOL/LOL 1.0). Scrobal impression glabrate to very lightly reticulate. Interantennal projection small, pointed apically. Subocular sulcus complete. Face reticulate to imbricate, frons imbricate.

Antenna with scape 1.8 times longer than wide. Pedicel 1.1 times longer than wide. A1 shorter and narrower than A2. Funicular segments all wider than long, each successive segment slightly longer than preceding one, F1 noticeably narrower than F2. Club 1.5 times longer than wide.

Mesosoma with mesoscutum imbricate to coriaceous. Scutellum coriaceous anteriorly, glabrate posteriorly. Propodeum lightly sculptured, with small median carina and prespiracular prominence. Mesopleuron lightly reticulate. Sternopleural suture reaching anterior margin of

mesopleuron, not connected to small and incomplete mesopleural suture. Metapleuron small but visible.

Wings hyaline, veins light brown. Forewing with stigmal vein straight, nearly perpendicular to postmarginal vein. Marginal fringe extending past apex of wing, not reaching postmarginal vein. Basal cell with 11-13 setae. CC/MV 2.1, MV/PMV 2.1, MV/SV 1.9, PMV/SV 0.9.

Metasoma lightly reticulate. T2-T5 with median line. Posterior margin of T3 with deep medial incision, T2 and T4 with slight medial incision.

MALE. Unknown.

DISTRIBUTION. COSTA RICA.

BIOLOGY AND HOSTS. Unknown.

MATERIAL EXAMINED. Holotype ♀, COSTA RICA, Guanacaste, 3.ii.1978, D.H. Janzen, riparian (AEI, on point).

This species known only from the holotype.

ETYMOLOGY. From the Latin *im-*, meaning not or without, and *pilus*, meaning hair; referring to the absence of squamiform setae.

***Tanaostigma plaumanni* LaSalle, sp. n.**

Figure 78.

DIAGNOSIS. Females of *T. plaumanni* are distinguished from other *Tanaostigma* by the following characters: squamiform white setae present on head and body; scutellum with lateral glabrate area; mesopleuron with longitudinal white or yellow stripe on dorsal margin in anterior half; F2 distinctly wider than F6 (fig.78); dorsal surface of pedicel without squamiform setae; face with scattered minute punctures.

FEMALE. Length 1.9-2.0 mm. Dark brown with yellow markings as follows: face with wide transverse stripe which only extends from lateral margin of clypeus about 2/3 of distance to subocular sulcus; stripe bordering eye margin on gena from slightly lateral to genal suture to about 1/3 eye height, turning slightly medially dorsally and terminating on occiput; frons with narrow transverse stripe from eye margin to scrobal impression at level of dorsal margin of torulus; narrow longitudinal stripe bordering dorsal 2/3 of scrobal impression; longitudinal stripe on prepectus dorsally, humeral plate, anterior half of mesopleuron; tarsal segments 1-4 on all legs (hind basitarsus dark dorsally); T8 apically; ovipositor sheaths. Squamiform white setae on frons, dorsum of mesosoma, T2-T7.

Head 1.2-1.35 times wider than long. Lateral ocellus nearer to median ocellus than eye margin (OOL/LOL 1.7-1.8). Slight transverse ridge between lateral ocelli. Scrobal impression glabrate to finely, transversely strigulate.

Interantennal projection small, with slight median ridge. Subocular sulcus complete. Frons and interantennal projection reticulate; face transversely reticulate to finely strigulate with numerous minute, setiferous punctures.

Antenna (fig.78) with scape 1.6-1.75 times longer than wide, with flattened ventral expansion. Pedicel 0.9-1.0 times as long as wide. A1 slightly shorter and narrower than A2. All funicular segments wider than long, slightly laterally compressed; F2 widest, segments decreasing in width to F6. Club 1.7-1.8 times longer than wide, slightly narrower than funicle.

Mesosoma dorsally reticulate; scutellum with lateral glabrate area. Propodeum with median carina, lateral carinae between median carina and prespiracular prominence. Mesopleuron reticulate to elongate reticulate. Sternopleural suture not reaching anterior margin of mesopleuron, not connected to mesopleural suture. Metapleuron small but easily visible. Middle tibia with longitudinal carina on dorsal margin.

Wings hyaline, veins light brown. Forewing with stigmal vein straight, nearly perpendicular to postmarginal vein. Marginal fringe extending to apex of wing. Basal cell with 13-20 setae. CC/MV 2.05-2.35, MV/PMV 3.0-3.75, MV/SV 2.1-2.25, PMV/SV 0.6-0.75.

Metasoma reticulate to transversely reticulate. T2-T4 with median line. Posterior margin of T3 with deep medial incision equal to about half the length of tergum. Posterior margin of T2 and T4 with slight medial incision.

MALE. Unknown.

DISTRIBUTION. BRAZIL: Santa Catarina.

BIOLOGY AND HOSTS. Unknown.

MATERIAL EXAMINED. Holotype ♀, BRAZIL, Santa Catarina, Nova Teutonia, 22.x.1949, F. Plaumann (BMNH, point).

3♀ paratypes. As holotype (2♀, BMNH; 1♀, USNM).

ETYMOLOGY. Named for the collector, Fritz Plaumann.

Tanaostigma gahani (Gomes), comb. n.
Figures 79,158,175.

Trichencyrtus gahani Gomes, 1942:290-292. Holotype ♀, BRAZIL [not examined].

DIAGNOSIS. Females of *T. gahani* are distinguished from other *Tanaostigma* by the following characters: squamiform white setae present on head and body; scutellum with lateral glabrate area; mesopleuron with complete longitudinal white stripe on dorsal margin; F2 not distinctly wider than F6 (fig.79); dorsal surface of pedicel without squamiform setae;

face with scattered minute punctures; body black, antenna black, hind femur black to dark brown; ventral surface of hind femur with subapical tooth (fig.158); all funicular segments wider than long.

This species may be extremely difficult to separate from *T. slossonae* (see discussion section under this species).

FEMALE. Length 1.35-2.45 mm. Black to dark brown with white to yellow markings as follows: face with wide transverse stripe which continues onto gena for about half the height of eye then turns medially and ends on occiput, this stripe may be partially or completely interrupted medially at clypeus; frons with narrow transverse stripe from eye to scrobal impression at level of dorsal margin of torulus; raised longitudinal stripe bordering scrobal impression in dorsal half; longitudinal line on prepectus dorsally; longitudinal line on mesopleuron dorsally; spot on tegula anterodorsally; tarsal segments 1-4 on all legs; T8 apically; ovipositor sheaths. Squamiform white setae as follows: frons, dorsal margin of scape, pronotum dorsally, mesoscutum, scutellum, axilla, prepectus, humeral plate, propodeum laterally, mesosomal sterna, coxae, femora, T2-T8.

Head 1.25-1.35 times wider than high. Lateral ocellus much nearer to median ocellus than eye margin (OOL/LOL 2.4-2.75). Scrobal impression glabrate, extending to median ocellus. Interantennal projection small, without median ridge. Subocular sulcus complete. Frons reticulate; face elongate reticulate to finely strigulate with numerous minute, setiferous punctures.

Antenna (fig.79) with scape 1.9-2.0 times longer than wide, with flattened ventral expansion. Pedicel 1.2-1.25 times longer than wide. A1 slightly shorter and narrower than A2. All funicular segments wider than long, slightly laterally compressed, of approximately equal width. Club 1.45-1.7 times longer than wide, slightly narrower than funicle.

Mesosoma dorsally reticulate; scutellum with lateral glabrate area. Propodeum reticulate with small median carina. Mesopleuron reticulate. Sternopleural suture not reaching anterior margin of mesopleuron, faintly connected to mesopleural suture. Metapleuron slightly reduced and sunken, but still easily visible, subrectangular. Middle tibia with longitudinal carina on dorsal margin. Hind femur with small tooth distally on ventral margin (fig.158).

Wings hyaline, veins light brown. Forewing with stigmal vein straight, at slightly less than a right angle to postmarginal vein. Marginal fringe extending to apex of wing. Basal cell with 10-20 setae. CC/MV 2.1-2.2, MV/PMV 2.2-2.4, MV/SV 2.05-2.15, PMV/SV 0.85-0.95.

Metasoma reticulate. T2-T4 with medial line. Posterior margin of T3 with deep medial incision equal to about half the length of tergum. Posterior margin of T2 and T4 with slight medial incision.

MALE. Length 1.5-1.85 mm. Coloration and squamiform setae as in females. Frons without transverse furrow. Antenna with long rami on F1-F4; rami on F1 and F2 about equal in length, rami on F3 and F4 progressively shorter; rami on F2-F4 reaching apex of F5. Funicular segments increasing in length to F5, F6 noticeably shorter than F5.

DISTRIBUTION. BRAZIL: Rio de Janeiro, Bahia; COLOMBIA; VENEZUELA.

BIOLOGY AND HOSTS. From the seeds of *Cratylia moelis* and *Canavalia ensiformis* (Fabaceae; Faboidea), and *Inga* sp. (Fabaceae; Mimosoidea). Three seeds of *C. ensiformis* are in the USNM associated with the 2 females collected by P. Kinzel in Venezuela; seeds of this species are also pictured by Gomes with the original description (1942:291). The seeds are about 15 mm. long with one to several small (2-4mm), globose galls on their perimeter (fig.175).

MATERIAL EXAMINED. Paratypes. BRAZIL, Rio de Janeiro: Distrito Federal [Estado do Rio], Guaratibo, 29.vii.1934, A. Silva (3♀, USNM); BRAZIL, Bahia: 9.vii.1928, G. Bondar, seeds of *Canavalia ensiformis* (3♀, 2♂, IOC).

Non-type material. VENEZUELA: El Valle, 5.v.1939, P. Kinzel, galls in seed of *Canavalia ensiformis* (2♀, USNM). COLOMBIA: Dept. Valle, Atuncela, 10.xii.1974, R. Wilkerson, malaise trap by stream (3♀, FSCA. 1♀: BMNH, CNC, LAS).

DISCUSSION. *T. gahani* and *slossonae* are very closely related, and may be difficult to separate. Character states given in the key and discussion are not always discrete, and may grade into one another. *T. gahani* is known from South America, *slossonae* from southern Florida and the Carribean. It may be that differences between these species represent geographical variation in one widespread species.

COMMENTS. Gomes stated in his original description that type material was in the "Divisão de Defesa Sanitaria Vegetal", IOC and USNM. I have examined paratypes from IOC and USNM, but was unable to locate and borrow the remaining material, which presumably contained the holotype.

***Tanaostigma slossonae* (Crawford), comb. n.**
Figures 40, 80, 159.

Tanaostigmodes slossonae Crawford, 1911:442. Lectotype ♀ (present designation), USA, Florida, Biscayne Bay (USNM, #13360) [examined].

DIAGNOSIS. Females of *T. slossonae* are distinguished from other *Tanaostigma* by the following characters: squamiform white setae present on head and body; scutellum with lateral glabrate area; mesopleuron with complete longitudinal white stripe on dorsal margin; F2 not distinctly wider than F6 (fig.80); dorsal surface of pedicel without squamiform setae; face with scattered minute punctures (fig.40); body brown, antenna brown with light brown to yellow ventral expansion of scape, hind femur light brown to yellow; ventral surface of hind femur without subapical tooth

(fig.159); some funicular segments may be subequal in length and width (fig.80).

This species may be extremely difficult to separate from *T. gahani* (see discussion section under that species).

FEMALE. Length 1.35-2.15 mm. Brown with light yellow markings as follows: face with wide transverse stripe which continues on gena for over half the height of eye; frons with narrow transverse stripe from eye to scrobal impression at level of dorsal margin of torulus, this stripe turning dorsally as it nears torulus and bordering scrobal impression almost to median ocellus, stripe slightly raised where it borders scrobal impression (these transverse bands on the face and frons may not be sharply differentiated, rather just slightly divided by an indistinct band of darker color); scape ventrally; dorsal line on prepectus; humeral plate dorsally; longitudinal line dorsally on mesopleuron; tarsi; T8 apically; ovipositor sheaths. Legs light brown to yellow. Squamiform white setae as follows: frons, pronotum dorsally, mesoscutum, scutellum, axilla, prepectus, humeral plate, propodeum laterally, coxae, femora, mesosomal sterna, T2-T8.

Head (fig.40) 1.25-1.45 times wider than high. Lateral ocellus nearer to median ocellus than eye margin (OOL/LOL 1.8-2.5). Scrobal impression nearly glabrate, only very faintly sculptured. Interantennal projection small, with median ridge dorsally. Subocular sulcus complete. Frons reticulate; face elongate reticulate to finely strigulate with numerous minute, setiferous punctures.

Antenna (fig.80) with scape 2.05-2.2 times longer than wide, with flattened ventral expansion. Pedicel 1.0-1.1 times longer than wide. A1 slightly narrower than and about half the length of A2. Funicular segments usually wider than long, F5-F6 may be subequal in length and width. Club 1.8-1.95 times longer than wide, subequal in width to funicle.

Mesosoma dorsally reticulate; scutellum with lateral glabrate area. Propodeum reticulate with median longitudinal carina. Mesopleuron reticulate. Sternopleural suture not reaching anterior margin of mesopleuron, faintly connected to mesopleural suture. Metapleuron slightly reduced and sunken, but still visible. Middle tibia with longitudinal carina on dorsal margin. Ventral margin of hind femur without tooth (fig.159), may be slightly produced near apex, but not definitely toothed as in *T. gahani*.

Wings hyaline, veins light brown. Forewing with stigmal vein straight, at slightly less than a right angle to postmarginal vein. Marginal fringe extending to apex of wing. Basal cell with 10-22 setae. CC/MV 2.15-2.35, MV/PMV 1.8-2.6, MV/SV 1.7-2.05, PMV/SV 0.75-0.95.

Metasoma reticulate. T2-T4 with median line. Posterior margin of T3 with deep medial incision equal to about half the length of tergum. Posterior margin of T2 and T4 with slight medial incision.

MALE. Length 1.1-1.8 mm. Coloration and squamiform setae as in female. Frons without transverse furrow. Antenna with long rami on F1 to F4; rami on F1 and F2 about equal in length; rami on F3 and F4 progressively

shorter, reaching apex of F5. Funicular segments increasing in length to F5, F6 noticeably shorter than F5.

DISTRIBUTION. USA: Florida; BAHAMA ISLANDS; CUBA.

BIOLOGY AND HOSTS. Reared from seeds and pods of *Galactia volubilis* and *G. striata* (Fabaceae; Faboidea). Pods of *G. volubilis* infested by *T. slossonae* have few or no properly formed seeds in them, rather they are full of small (1.5-3.0 mm.) globose galls from which these wasps had emerged.

MATERIAL EXAMINED. Lectotype ♀, USA, Florida, Biscayne Bay (USNM, point).

Paralectotypes. As lectotype (2♀, 1♂, USNM).

Non-type material. USA, Florida: Key West, 10.v.1950, L.W. Holley (2♀, 2♂ USNM); Key West, 7.iv.1945, from seeds of *Galactia volubilis* (3♀, 2♂, USNM. 2♀, 1♂: CNC, UCR, AEI); 1.9 mi. S. Cudjoe Key, Loggerhead Key, 15-17.ii.1973, R. Thorington, J. Layne, P. Cone (1♀, USNM); Marathon, 21.iii.1967, C.E. Stegmaier, on *Galactia* (1♀, USNM); Matecumbe Key, 15.vii.1970, C.E. Stegmaier, pods of *Galactia striata* (5♀, 3♂, USNM; 2♀, 1♂, BMNH); Dade Co., Hialeah, 15.vii.1972, C.E. Stegmaier, seed pods of *Galactia* (6♀, 3♂, USNM. 1♀, 1♂: FSCA, LAS, MLP, TAMU, ANIC, QMB, PPRI, ZIL); Monroe Co., Lower Matecumbe Key, 22.iii.1977, E.E. Grissell, *Galactia volubilis* (8♀, 1♂, USNM, 1♀, LAS); Monroe Co., Key Largo, 26.ii.1956, H.V. Weems, Jr., (1♀, 2♂, USNM, FSCA); Monroe Co., Key Largo Key, North end, 21.iii.1977, E.E. Grissell, *Coccoloba diversifolia* (1♀, FSCA); Monroe Co., Upper Matabcombe, 22.iii.1977, E.E. Grissell, on vine (1♂, FSCA) BAHAMA ISLANDS: Little Harbor Cay, Berry Islands, 1.v.1953, E.B. Hayden & L. Giovannoli (1♀, USNM); West End, Grand Bahama Island, 12.v.1953, E.B. Hayden & G.B. Rabb (1♀, AMNH). CUBA: Guatanamo, C.W. Metz (1♀, MCZ).

DISCUSSION. *T. slossonae* is very closely related to *gahani*. See discussion section under that species.

Tanaostigma coursetiae Howard

Figures 77, 130, 176.

Tanaostigma coursetiae Howard, 1890:148. Lectotype ♀ (present designation), MEXICO, Sonora, Alamos Mtns. (USNM, #1487) [examined].

DIAGNOSIS. Females of *T. coursetiae* are distinguished from other *Tanaostigma* by the following characters: squamiform white setae present on head and body; scutellum with lateral glabrate area; dorsal surface of pedicel with squamiform setae; face without minute punctures;

mesopleuron with complete, longitudinal white stripe on dorsal margin; occiput with transverse white stripe posterior to ocelli.

FEMALE. Length 1.6-1.9 mm. Black to dark brown with blue to violet tinge, and white to pale yellow markings as follows: face with wide transverse stripe which continues onto gena and occiput; frons with narrow transverse stripe at level of dorsal margin of torulus; scrobal impression white except central black patch connected to very narrow longitudinal black line projecting dorsally to median ocellus; longitudinal line on dorsal half of interantennal projection; transverse line on vertex posterior to ocelli; longitudinal line bordering inner eye margin; transverse line on occiput extending from eye margin medially about halfway to center of head; transverse line on pronotum dorsally; spot on anterodorsal margin of prepectus; longitudinal stripe on mesopleuron dorsally; small spot on fore tibia distally; middle tarsal segments 1-4; hind tarsal segments 3-4; T8 posteriorly; ovipositor sheaths except for thin black line ventrally. Squamiform white setae as follows: frons, occiput dorsally, dorsal margin of scape, pedicel dorsally, pronotum, mesoscutum, scutellum, axilla, prepectus, tegula, humeral plate, propodeum laterally, coxae, femora, tibiae, T2-T8.

Head 1.4-1.5 times wider than high. Lateral ocellus variable in relation to median ocellus (OOL/LOL 0.8-1.2). Scrobal impression shallow, glabrate. Interantennal projection small, with median ridge ventrally. Subocular sulcus complete. Frons reticulate; face, gena and occiput elongate-reticulate.

Antenna (fig.77) with scape 2.0-2.3 times longer than wide, with flattened ventral expansion. Pedicel 1.1-1.25 times longer than wide. A1 about half as long, slightly narrower than A2. All funicular segments wider than long, of about equal width, slightly laterally compressed; segments increasing in length distally. Club 1.3-1.65 times wider than long, about equal in width to funicle.

Mesosoma dorsally reticulate; scutellum with lateral glabrate area. Propodeum lightly reticulate with very slight median carina. Mesopleuron reticulate. Sternopleural suture complete to anterior margin of mesopleuron, not connected to mesopleural suture. Metapleuron highly reduced, barely visible. Middle tibia with longitudinal carina on dorsal margin.

Wings hyaline, veins light brown. Forewing (fig.130) with stigmal vein straight or only very slightly curved, nearly perpendicular to postmarginal vein. Marginal fringe extending to apex of wing. Basal cell with 6-24 setae. CC/MV 1.95-2.3, MV/PMV 3.3-4.15, MV/SV 1.8-2.35, PMV/SV 0.5-0.65.

Metasoma reticulate. T2-T5 with medial line. Posterior margin of T3 with deep medial incision equal to about half the length of tergum. Posterior margin of T2, T4 and T5 with slight medial incision.

MALE. Length 1.3-1.65 mm. Black to dark brown with slight metallic blue to purple tinge, without white markings or squamiform setae. Frons with transverse furrow about equidistant from torulus and median ocellus.

Antenna with long rami on F1-F4, all rami extending to apex of funicle. Funicular segments increasing in length to F5; F6 noticeably shorter than F5.

VARIATION. Specimens from Mexico and Costa Rica have OOL/LOL 1.1-1.2; specimens from Puerto Rico and Dominican Republic have OOL/LOL 0.8-0.9. Mexican specimens have a longitudinal white stripe on ventral surface of scape; all other specimens lack this stripe.

DISTRIBUTION. MEXICO: Sonora, Sinaloa, Michoacan; COSTA RICA; PUERTO RICO; DOMINICAN REPUBLIC.

BIOLOGY AND HOSTS. From galls in ovaries of *Willardia mexicana* (fig.176) (in Mexico), buds of *Lonchocarpus latifolia* (in Puerto Rico) (Fabaceae; Faboidea).

MATERIAL EXAMINED. Lectotype ♀, MEXICO, Sonora, Alamos Mtns., early 1890, E. Palmer, ovaries of *Willardia mexicana* (USNM, point).

Paralectotypes. As lectotype (2♀, 9♂, USNM).

Non-type material. MEXICO, Sonora: Alamos Mtns., E. Palmer (2♂, MCZ); MEXICO, Sinaloa: 22 km. N. Los Mochis, 23.vi.1981, J. LaSalle, sweeping flowers of *Willardia mexicana* (voucher specimen of plant in UCR Herbarium, #24556) (1♀, LAS); MEXICO, Michoacan: 49 mi. SE Aquila, 13.vii.1984, J.B. Woolley (1♀, TAMU). COSTA RICA: Guanacaste, Santa Rosa Park, 18.ix.1977 & 8.ii.1978, D.H. Janzen, dry hill (2♀, AEI). PUERTO RICO: Dorado, 20.iv.1964, R. Woodbury, from buds of *Lonchocarpus latifolia* (12♀, 1♂, USNM. 1♀: BMNH, CNC, LAS, UCR, AEI). DOMINICAN REPUBLIC: San Jose de las Matas, 1000-2000 ft., vi.1938, Darl. (1♀, MCZ).

***Tanaostigma lobo* LaSalle, sp. n.**

Figure 122.

DIAGNOSIS. Females of *T. lobo* are distinguished from other *Tanaostigma* by the following characters: squamiform white setae present on head and body; scutellum with lateral glabrate area; dorsal surface of pedicel with squamiform setae; face without minute punctures; mesopleuron entirely black; median ocellus not bordered by white spot; humeral plate without a large black seta in addition to squamiform setae (fig.122); metapleuron not visible (fig.122).

FEMALE. Length 2.05-2.15 mm. Black with white or pale yellow markings as follows: face with wide transverse stripe; frons with narrow transverse stripe extending from eye to scrobal impression just dorsal to torulus; small spot adjacent to lateral ocellus; small longitudinal line dorsally on interantennal projection; small median spot on dorsum of pronotum (some specimens lack this spot); anterodorsal spot on prepectus; small stripe on

dorsal edge of tegula; T8 apically. Body with squamiform white setae as follows: frons, occiput, gena, dorsal margin of scape, pedicel dorsally, pronotum dorsally, mesoscutum, prepectus, axilla, scutellum, propodeum laterally, tegula, humeral plate, fore and middle sterna, coxae, femora, T2-T8.

Head 1.45-1.6 times wider than long. Lateral ocellus closer to median ocellus than eye margin (OOL/LOL 1.15-1.4). Weak transverse ridge between lateral ocelli. Scrobal impression shallow, reticulate dorsally, glabrate ventrally. Interantennal projection small, with longitudinal median carina ventrally. Subocular sulcus complete. Frons reticulate; face, gena and occiput elongate reticulate.

Antenna with scape 1.75-2.1 times longer than wide, with flattened ventral expansion. Pedicel 1.15-1.3 times longer than wide. A1 about half as long, slightly narrower, than A2. All funicular segments wider than long, slightly laterally compressed; F2 widest, segments decreasing in width to F6. Club 1.35-1.85 times longer than wide, narrower than funicle.

Mesosoma (fig.122) dorsally reticulate; scutellum with lateral glabrate area. Propodeum with median carina, and one to three lateral carinae between median carina and spiracle. Mesopleuron reticulate. Sternopleural suture complete to anterior margin of mesopleuron, not connected to mesopleural suture. Metapleuron not visible. Middle tibia with longitudinal carina on dorsal margin.

Wings hyaline, veins light brown. Forewing with stigmal vein straight or slightly curved, nearly perpendicular to postmarginal vein. Marginal fringe extending past apex of wing, sometimes as far as postmarginal vein. Basal cell with 20-26 setae. CC/MV 1.8-1.95, MV/PMV 3.15-3.4, MV/SV 2.05-2.4, PMV/SV 0.6-0.75.

Metasoma reticulate. T2-T5 with medial line. Posterior margin of T3 with deep medial incision equal to about half of the length of tergum. Posterior margin of T2, T4 and T5 with slight medial incision.

MALE. Length 1.15-1.55 mm. Black, may have small white to yellow spot lateral to clypeus on oral fossa, and/or at ventral margin of eye. Usually squamiform setae present at least on metasoma. Frons with transverse furrow about equidistant between torulus and median ocellus. Antenna with long rami on F1-F4, all rami extending to apex of funicle. Funicular segments increasing in length to F5, F6 noticeably shorter than F5.

DISTRIBUTION. MEXICO: Morelos, Guerrero.

BIOLOGY AND HOSTS. Collected sweeping flowers of *Aeschynomene petraea* var. *madrensis*, (Fabaceae; Faboidea).

MATERIAL EXAMINED. Holotype ♀, MEXICO, Morelos, 20 km. E. Cuernavaca, Canon del Lobo, 7.vii.1981, E.M. Fisher & J. LaSalle, sweeping *Aeschynomene petraea* var. *madrensis* (voucher specimen of plant in UCR Herbarium, #24555) (USNM, point).

6♀, 9♂ paratypes. MEXICO, Morelos: as holotype (2♀, 6♂, USNM. 1♀, 1♂: BMNH, CNC, LAS). MEXICO, Guerrero: 5 mi. S., 2.5 mi. E. Chilpancingo, 3800', 6.viii.1962, Univ. Kans. Mex. Exp. (1♀, SMEK).

ETYMOLOGY. The Spanish word *lobo*, meaning wolf, taken from the type locality, Canon del Lobo, Morelos, Mexico.

Tanaostigma chapadae (Ashmead), comb. n.

Figures 39, 89, 96, 121, 163.

Trichencyrtus chapadae Ashmead, 1904:291. Holotype ♀, BRAZIL, Mato Grosso, Chapada (USNM, #60554) [examined].

Trichencyrtus robustus Ashmead, 1904:495. Objective synonym of *T. chapadae*.

DIAGNOSIS. Females of *T. chapadae* are distinguished from other *Tanaostigma* by the following characters: squamiform white setae present on head and body (fig. 39, 89); scutellum with lateral glabrate area (fig. 96); dorsal surface of pedicel with squamiform setae; face without minute punctures; mesopleuron entirely black; median ocellus bordered by small white spot; humeral plate with a large black seta in addition to squamiform setae (fig. 121); metapleuron small but visible (fig. 121).

FEMALE. Length 1.95-2.7 mm. Black with white to pale yellow markings as follows: face with wide transverse stripe which continues onto gena and occiput; frons with narrow transverse stripe extending from eye to scrobal impression just dorsal to torulus, turning slightly dorsally at torulus and terminating in scrobal impression; small longitudinal stripe dorsally on interantennal projection; small spot adjacent to each ocellus; small spot on occiput bordering hind margin of compound eye; white spot anterodorsally on prepectus; longitudinal white stripe may be present on tegula; T8 apically; ovipositor sheaths. Terminal tarsal segment always black, other tarsal segments variable from white to black. Squamiform white setae as follows: face, vertex, occiput, dorsal margin of scape, pedicel dorsally, mesoscutum, tegula, humeral plate, prepectus, axilla, scutellum, propodeum laterally, sterna, coxae, femora, T2-T8. One large, black seta on humeral plate.

Head (fig. 39) 1.35-1.5 times wider than long. Lateral ocellus nearer to median ocellus than eye margin (OOL/LOL 1.15-1.45). Scrobal impression shallow, reticulate. Interantennal projection small. Subocular sulcus complete. Face and frons reticulate, gena and occiput elongate reticulate.

Antenna with scape 1.85-2.05 times longer than wide with flattened ventral expansion. Pedicel 1.1-1.35 times longer than wide. A1 slightly shorter and narrower than A2. All funicular segments wider than long, slightly laterally compressed, F2 widest. Club 1.25-1.7 times wider than long, narrower than funicle.

Mesosoma (fig. 121) with mesoscutum (fig. 89) and scutellum (fig. 96) reticulate, scutellum with lateral glabrate area. Propodeum without

median carina, with transverse carina posteriorly medial to prespiracular prominence. Mesopleuron reticulate. Sternopleural cleft almost complete to anterior margin of mesopleuron, faintly connected to mesopleural suture. Metapleuron reduced but easily visible. Middle tibia with longitudinal carina on dorsal margin.

Wings hyaline, veins light brown. Forewing with stigmal vein almost straight, at slightly less than a right angle to postmarginal vein. Marginal fringe extending past apex of wing, sometimes as far as postmarginal vein. Basal cell with 20-22 setae on dorsal surface of wing. CC/MV 1.6-2.25, MV/PMV 2.6-2.95, MV/SV 1.85-2.6, PMV/SV 1.05-1.4.

Metasoma (fig.163) reticulate. T2-T5 with medial line. Posterior margin of T3 with deep medial incision equal to about half the length of tergum. Posterior margin of T2 and T4 with slight medial incisions.

MALE. Length 1.3-2.15 mm. Black except small white to yellow spot on face lateral to clypeus; tarsal segments 1 to 3 or 4 on all legs brown. Without squamiform setae. Frons with transverse furrow about equidistant from torulus and median ocellus. Antenna with long rami on F1-F4, all rami extending to apex of funicle. Funicular segments increasing in length to F5, F6 noticeably shorter than F5.

DISTRIBUTION. BRAZIL: Mato Grosso, Santa Catarina, Sao Paulo; ARGENTINA: Misiones; TRINIDAD.

BIOLOGY AND HOSTS. Known from galls on *Machaerium* sp. (Fabaceae; Faboidea). Gomes (1942) gave a photograph of these galls. They are globose and attached laterally to the branches by a small petiole. Each gall contains several wasps.

MATERIAL EXAMINED. Holotype ♀, BRAZIL, Mato Grosso, Chapada, April, H.H. Smith (USNM, point).

Non-type material. BRAZIL, Sao Paulo: Brotas, 7.viii.1932, galls on *Machaerium*, (1♀, USNM) [referred to as homeotype by Gomes (1942)]; BRAZIL, Santa Catarina: Nova Teutonia, 300-500 m, vii & x.1972, F. Plaumann (17♀, 25♂, CNC. 1♀, 1♂: USNM, BMNH, LAS, UCR, AEI, MLP, TAMU, ANIC, QMB, PPRI, ZIL). ARGENTINA, Misiones: Loreto, 30.viii.1935, A.A. Oglobin (1♀, MLP); TRINIDAD: St. George, St. Augustine, 15.vii-13.viii.1976, J.S. Noyes, malaise trap (1♀, BMNH).

COMMENTS. *T. chapadae* and *T. robustus* (Ashmead) 1904 are objective synonyms, being two different names given by Ashmead to the same specimen. This specimen was described as *T. robustus* by Ashmead (p.495), and that name is on a label on the specimen. However, in an earlier part of the same work (p.291-2) he first mentioned the genus *Trichencyrtus* and designated *T. chapadae* as the type species. There was only one specimen involved (from Chapada) and it is obvious that both names refer to this same specimen. *T. chapadae* was given as the type species of *Trichencyrtus* by Ashmead, and Gahan & Fagan (1923:147) listed *T. chapadae* as type species of *Trichencyrtus* by original designation. For

this reason Gomes (1942), acting as first reviser, chose *T. chapadae* to have priority over *T. robustus*.

Unplaced Species in the Genus *Tanaostigma*.

Tanaostigma albosquamatum (Kieffer & Jörgensen), comb. n.

Dendrosema albosquamatum Kieffer & Jörgensen, 1910:430. Type material (♀ ♂), ARGENTINA [?lost].

Material for this species was not examined.

DISTRIBUTION. ARGENTINA.

BIOLOGY AND HOSTS. Supposedly a parasite (more likely the gall former) within a gall on *Prosopis strombulifera* (Fabaceae; Mimosoidea).

COMMENTS. I have not located type material, or other material of this species, and the types are probably lost (see discussion of Kieffer & Jörgensen's type material under Unplaced Species of New World Tanaostigmatidae).

DISCUSSION. Even though I have seen no material, I am confident that this species belongs in the genus *Tanaostigma*. It is described as having the head, mesosoma, femora, tibiae and metasoma densely covered with scale-like setae (a character unique to this genus). Additionally, body color and shape of the antenna correspond to *Tanaostigma*.

It is not possible to assess relationships of *albosquamatum* with other members of this genus, however it does appear distinct from any treated here. The male antenna is described as having 5 funicular rami, a character only seen in *stanleyi* and *bennetti*. From the description, *albosquamatum* is definitely not *stanleyi* and most likely not *bennetti*; nor does it appear to be *plaumanni*, the only species for which males are unknown. Nothing more can be assumed about this species without seeing material.

Genus *TANAONEURA* Howard

Tanaoneura Howard, 1897:146-147. Type species *Tanaoneura ashmeadi* Howard, 1897, by monotypy.

DIAGNOSIS. Females of the genus *Tanaoneura* are distinguished from other tanaostigmatids by the following combination of characters: head and dorsum of mesosoma with large, usually shallow, setiferous punctures (figs.36-37,49-50,90); interantennal projection present, strongly developed, and usually extending 1/3-1/2 the distance from the torulus to the median

ocellus (figs.36-37,50); F1-F5 and usually F6 longer than wide (figs.81-82); dorsum of metasoma glabrate basally (at least base of T2).

FEMALE. Color usually black to dark brown with some yellow markings. White or silver setae often present on head and/or body.

Head with large, usually shallow, setiferous punctures. Interantennal projection present, usually well developed and extending $1/3$ - $1/2$ the distance from the torulus to the median ocellus. Scrobal impression usually deep, with well-defined, narrowly rounded to sharp lateral margin. Subocular sulcus complete or incomplete.

Antenna with scape usually more than 3.5 times longer than wide; usually with small ventral expansion apically. Funicular segments usually all longer than wide; at least F1-F5 longer than wide, F6 may be subequal in length and width.

Mesosoma dorsally with large, usually shallow, setiferous punctures, although these may be difficult to distinguish in some species. Notauli usually complete, sometimes incomplete. Propodeum variable, usually with one or more median carinae. Mesopleuron usually strigulate to glabrate; may have some reticulate sculpture.

Wings usually hyaline, may be faintly infumated. Stigmal vein distinctly curved.

Metasoma dorsally glabrate at base. Posterior margin of T2-T4 may have slight medial incision.

MALE. Antenna without rami, usually with funicular segments with slight to distinct dorsal projection. Frons without a transverse furrow.

DISCUSSION. *Tanaoneura* is distinguished by a combination of characters. None of these characters are unique to this genus, they are all found in a few other species in the family. However, only in *Tanaoneura* are they found in combination. The large, setiferous punctures are seen in *Tanaostigmodes punctus*, which also has a strong interantennal projection, however this species has several of the funicular segments distinctly wider than long. *Microprobolos titan* also has large, setiferous punctures, as well as similar antenna to *Tanaoneura*, however this species lacks a strong interantennal projection, and differs in other characters discussed below. Minute punctures are seen in many species, however these are not easily confused with the larger punctures, and they are never found in combination with the other characters of this genus. The large interantennal projection and the funicle with all segments longer than wide are each found in species of *Tanaostigmodes*, but never in combination with each other and large punctures. Within *Tanaoneura*, only *T. aurifer* and *incompleta* do not display all these characters in that in these species the interantennal projection, while distinct, only extends about $1/4$ of the distance from the torulus to the median ocellus.

Tanaoneura is most closely related to *Microprobolos*. Both have large, setiferous punctures, and similar antennae with all funicular segments longer than wide. These are derived characters for these two genera, and make them a monophyletic unit. The large punctures only appear in one

Within *Tanaoneura* the species *aurifer*, *smicropleura* and *inexacta* are distinct due to unique characters: the densely setose basal cell (over 100 setae) (fig.143) and honey yellow color in *aurifer*; the reduced mesopleuron (fig.117) and antennae inserted very high on the frons (fig.50) in *smicropleura*; and the marginal and postmarginal veins swollen at the junction of the stigmal vein, and short postmarginal vein (less than half the length of the stigmal vein) (fig.148) in *inexacta*. In *hirticoxa*, *matamata* and *darwini* the hind coxa is densely covered with silver to white setae over the entire dorsal surface (fig.153); *aurifer* has the hind coxa covered with brown setae over the entire dorsal surface, other species have the hind coxa without setae basally (fig.154), or with only a single row. Three species, *maculiventris*, *flavilineata*, and *incompleta* appear to form a related group as they are all black to dark brown with the base of the metasoma dorsally yellow to light brown (*hirticoxa* also has this character), however a non-color character has not been found to unite these species. The remaining two species, *ashmeadi* and *portoricensis*, are very closely related, and are only separated from each other by the exceptionally long postmarginal vein in *ashmeadi*.

Key to New World Species of *Tanaoneura* (Based on females)

- 1 Forewing densely setose, basal cell with more than 100 setae (fig.143). Scrobal impression shallow, without well-defined lateral margin (fig.49). Interantennal projection extending less than 1/4 the distance from torulus to median ocellus. General color honey-yellow to orange, with brown markings.
..... *aurifer*, sp. n. (p.118)
- 1' Forewing not so densely setose, basal cell with less than 60 setae (fig.144). Scrobal impression deep, with well-defined, narrowly rounded or sharp lateral margin (figs.36-37,50). Interantennal projection usually extending 1/3-1/2 the distance from torulus to median ocellus. General color dark brown to black, often with yellow markings.
..... 2

- 2(1) Mesopleuron reduced, distance from middle coxa to sternopleural suture equal to half the width of mesopleuron at that point (fig.117). Toruli inserted very high on head, distinctly closer to median ocellus than to clypeal margin (fig.50).
..... *smicropleura*, sp. n. (p.120)
- 2' Mesopleuron not so reduced, distance from middle coxa to sternopleural suture distinctly less than 1/4 the width of mesopleuron at that point (fig.109-110,118). Toruli closer to clypeal margin than to vertex, or equidistant from both (figs.36-37).
..... 3
- 3(2) Hind coxa densely covered over entire dorsal surface with silver to white setae (fig.153).
..... 4
- 3' Hind coxa without setae in basal half (fig.154), or with only a single line of setae.
..... 7
- 4(3) Dorsum of metasoma dark brown to black, with basal yellow spot or transverse line.
..... *hirticoxa*, sp. n. (p.121)
- 4' Dorsum of metasoma entirely dark brown.
..... 5
- 5(4) Club white, in contrast to dark funicle.
..... *matamata*, sp. n. (p.122)
- 5' Antennal coloration not as above, either entirely brown to black or with white to yellow funicle.
..... 6
- 6(5) Dorsum of metasoma entirely glabrate. Ovipositor exerted about 1/4 the length of metasoma.
..... *darwini*, sp. n. (p.124)
- 6' Dorsum of metasoma predominantly reticulate to strigulate, only glabrate basally on T2. Ovipositor not so exerted.
..... 7
- 7(3,6) Dorsum of metasoma dark brown to black with basal yellow to light brown spot or transverse line.
..... 8
- 7' Dorsum of metasoma dark brown to black without yellow to light brown markings basally.
..... 10

- 8(7) Notauli complete. Mesopleuron with at least some reticulate sculpture.
 *flavilineata*, sp. n. (p.125)
- 8' Notauli incomplete. Mesopleuron strigulate to glabrate, without reticulate sculpture.
 9
- 9(8) Anelli, and F1 yellow. Scutellum coriaceous (with punctures).
 *incompleta*, sp. n. (p.127)
- 9' Anelli and funicular segments black to dark brown. Scutellum reticulate to imbricate (with punctures).
 *maculiventris* (Gomes) (p.126)
- 10(7) Funicle white, club infumated. Forewing with marginal vein and postmarginal vein swollen at junction of stigmal vein (fig.148). Postmarginal vein very short, less than half the length of stigmal vein.
 *inexacta*, sp. n. (p.129)
- 10' Funicle black to dark brown. Forewing with marginal and postmarginal veins normal, not swollen at junction of stigmal vein. Postmarginal vein distinctly longer than half the length of stigmal vein.
 11
- 11(10) Postmarginal vein very long, longer than marginal vein.
 *ashmeadi* Howard (p.130)
- 11' Postmarginal vein distinctly shorter than marginal vein.
 *portoricensis* (Crawford) (p.131)

***Tanaoneura aurifer* LaSalle, sp. n.**

Figures 49,82,143.

DIAGNOSIS. Females of *T. aurifer* are distinguished from other *Tanaoneura* by the following characters: forewing densely setose, basal cell with more than 100 setae (fig.143) (the only *Tanaoneura* having this character); speculum separated from posterior margin of forewing by more setae than a single row representing subcubital vein; scrobal impression shallow, without well-defined lateral margin (fig.49); interantennal projection extending less than 1/4 the distance from torulus to median ocellus; head and body honey yellow to orange, with brown markings (the only *Tanaoneura* having this character); hind coxa densely covered with brown setae over entire dorsal surface.

FEMALE. Length 3.0-3.8 mm. Head yellow to honey-yellow with median black spot slightly below toruli, and with line around subocular sulcus and ventral margin of clypeus darkened. Scape yellow, darkened apically; remainder of antenna dark brown to black. Mesosoma honey-yellow to

brown dorsally, honey-yellow laterally, except propodeum laterally, metapleuron and hind coxa dark brown. Legs yellow. Metasoma honey yellow to orange yellow with lateral, longitudinal brown stripe. Ovipositor sheaths, at least apically, brown.

Head (fig.49) 1.15-1.35 times wider than high. Lateral ocellus much nearer to median ocellus than to eye margin (OOL/LOL 2.1-2.35). Scrobal impression glabrate, shallow, lateral margin not well-defined. Interantennal projection small, narrowly rounded apically, extending less than 1/4 of distance from torulus to median ocellus. Subocular sulcus extending about 1/2 the distance from eye to oral fossa. Frons and face very finely coriaceous, with scattered, large, shallow, setiferous punctures; these punctures with large black setae.

Antenna (fig.82) with scape 2.95-3.7 times longer than wide, with slight ventral expansion apically. Anelli subequal in width, A1 longer than A2. Pedicel 1.1-1.4 times longer than wide. F1 longer than wide, very slightly dorsally produced; funicular segments decreasing in length distally; F6 subequal in length and width. Club 2.3-2.6 times longer than wide.

Mesosoma coriaceous dorsally, with large, shallow, setiferous punctures. Scutellum with an impressed, longitudinal, medial furrow in anterior half. Propodeum with distinct median carina, and numerous smaller carinae. Mesopleuron entirely glabrate. Sternopleural suture not reaching anterior margin of mesopleuron, connected to mesopleural suture. Entire surface of hind coxa densely covered with brown setae. Metapleuron large, triangular.

Forewing lightly darkened, except for hyaline basal area; veins brown. Marginal fringe extending to postmarginal vein. Marginal vein slightly thickened at junction of stigmal vein. Forewing densely setose, basal cell (fig.143) with more than 100 setae. Speculum separated from posterior wing margin by more setae than a single row representing subcubital vein. CC/MV 2.05-2.15; MV/PMV 1.35-1.55; MV/SV 1.55-1.8; PMV/SV 1.05-1.3.

Metasoma very lightly coriaceous except T2 and T3 glabrate dorsally. A dense cluster of short setae present on T8 anterior to pygostyle, although this cluster not always visible due to telescoping of metasomal segments in some dried specimens. T8 densely setose in area where tergum wraps ventrally to enclose ovipositor sheaths. Ovipositor slightly exserted.

MALE. Unknown.

DISTRIBUTION. COLOMBIA.

BIOLOGY AND HOSTS. Reared from gall on *Calliandra* (Fabaceae; Mimosoidea).

MATERIAL EXAMINED. Holotype ♀, COLOMBIA, Medellin, v.1971, A. Madrigal, gall on *Calliandra* (USNM, point).

9♀ paratypes. As holotype (6♀, USNM; 1♀: BMNH, CNC, LAS).

ETYMOLOGY. The Latin *aurifer*, meaning gold bearing; referring to the golden color.

***Tanaoneura smicropleura* LaSalle, sp. n.**

Figures 50,117.

DIAGNOSIS. Females of *T. smicropleura* are distinguished from other *Tanaoneura* by the following characters: mesopleuron reduced in size, the distance from middle coxa to sternopleural suture equal to half the width of mesopleuron at that point (fig.117); toruli inserted very high on head, distinctly closer to median ocellus than to clypeal margin (fig.50) (both of these characters unique to this species).

FEMALE. Length 2.7-3.2 mm. Black to dark brown except scape, tegula, femora apically, tibiae and tarsi yellow to light brown.

Head (fig.50) 1.2-1.25 times wider than high. Lateral ocellus nearer to median ocellus than to eye margin (OOL/LOL 1.3-1.7). Scrobal impression deep, lateral margin well-defined. Toruli placed very high on head, distinctly nearer to median ocellus than to clypeal margin. Interantennal projection pointed apically, extending slightly over 1/2 the distance from toruli to median ocellus. Subocular sulcus extending about 1/2 the distance from eye to oral fossa. Frons and face imbricate to coriaceous with large, shallow setiferous punctures; these setae small and white. Face with finely imbricate median stripe confluent with interantennal projection.

Antenna with scape 4.65-5.0 times longer than wide. Pedicel 1.45-1.6 times longer than wide. A1 slightly longer and narrower than A2. F1 longer than wide; funicular segments decreasing in length distally; F6 subequal in length and width. Club 2.1-2.3 times longer than wide.

Mesosoma with mesoscutum imbricate-rugose; scutellum reticulate anteriorly, imbricate posteriorly; both with large, shallow setiferous punctures. These punctures may be difficult to distinguish. Propodeum with median carina, plus a strong lateral carina and distinct transverse carina posterior to spiracle. Mesopleuron strigate anteriorly, glabrate posteriorly. Sternopleural suture not reaching anterior margin of mesopleuron, connected to mesopleural suture. Mesopleuron reduced (fig.117); distance from middle coxa to sternopleural suture about half of the width of mesopleuron at that point. Dorsal surface of hind coxa sparsely setose, bare in basal half.

Wings hyaline, veins brown. Forewing with marginal fringe extending to postmarginal vein. Basal cell with 36-47 setae. CC/MV 3.05-4.1, MV/PMV 0.95-1.2, MV/SV 1.0-1.35, PMV/SV 1.05-1.1.

Metasoma very lightly imbricate to coriaceous dorsally. A dense cluster of short setae present on T8 just anterior to pygostyle, although this cluster not always visible due to telescoping of metasomal segments in some dried specimens.

MALE. Unknown.

DISTRIBUTION. PERU, NICARAGUA.

BIOLOGY AND HOSTS. Recorded from galls on guava, and *Inga* (Fabaceae; Mimosoidea) galls. Guava could refer to a variety of plant species, but most likely refers to members of the genus *Psidium* (Myrtaceae).

MATERIAL EXAMINED. Holotype ♀, PERU, Lima, B. Java, galls on branches of guava (USNM, point).

2♀ paratypes. PERU, Eulalia (Lima), 30.xi.1961, J. Soukup, *Inga* galls (1♀, USNM). NICARAGUA, Los Cocos, Masaya, 7.ix.1957, L.A. Osorio, "dentro rama guaba" (1♀, USNM).

ETYMOLOGY. From the Greek *smicros*, meaning small, and *pleuron*; referring to the reduced size of the mesopleuron.

Tanaoneura hirticoxa LaSalle, sp. n.

Figures 7,36,81,90,104,109,144,153.

DIAGNOSIS. Females of *T. hirticoxa* are distinguished from other *Tanaoneura* by the following characters: hind coxa densely covered with silver to white setae over entire dorsal surface (fig.153); mesosoma with many silver to white setae; dorsum of metasoma dark brown, with yellow spot basally; venter of metasoma yellow.

FEMALE. Length 1.65-2.9 mm. Head and mesosoma black to dark brown, except prepectus anterodorsally and on posterior margin, and tegula anteriorly yellow. Scape yellow to light brown, darkened dorsally, with small translucent ventral expansion apically. Pedicel from light brown to yellow ventrally, brown dorsally to entirely brown; remainder of antenna brown to black. Coxae and femora brown; femora basally and apically, tibiae and tarsi yellow to light brown; tibiae may have dusky to brown markings of varying size. Metasoma brown dorsally except T2 posteriorly, T3 anteriorly, and median spot on T7 yellow; brown laterally; yellow ventrally. Lateral brown coloration more extensive in anterior half of metasoma. Ovipositor sheaths yellow to light brown, dark brown apically.

Head (fig.36) 1.2-1.25 times wider than high. Lateral ocellus nearer to eye margin than to median ocellus (OOL/LOL 0.75-0.9). Scrobal impression rugose, margins abrupt. Interantennal projection acute dorsally, extending less than half the distance from torulus to median ocellus. Subocular sulcus complete. Face and frons reticulate to imbricate, with many large, shallow, setiferous punctures; the setae silver to white.

Antenna (fig.81) with scape 4.75-5.3 times longer than wide, with small ventral expansion apically. Pedicel 1.5-1.8 times longer than wide. A1 subequal in width and slightly shorter than A2. F1-F5 longer than wide; F6 from longer than wide to subequal in length and width. Club 1.6-2.0 times longer than wide.

Mesosoma dorsally reticulate, with scattered silver to white setae; these setae may be in shallow punctures on mesoscutum (fig.90). Notauli complete. Propodeum (fig.104) glabrate medially with a few to several longitudinal carinae; callus imbricate. Mesopleuron (fig.109) reticulate to imbricate anterodorsally, remainder imbricate to strigulate. Sternopleural suture not reaching anterior margin of mesopleuron, connected to mesopleural suture. Entire dorsal and ventral surface of hind coxa densely covered with silver to white setae (fig.153).

Wings hyaline, veins light brown to yellow. Forewing with marginal fringe extending past apex of wing but not reaching postmarginal vein. Basal cell (fig.144) with 10-22 setae. CC/MV 1.8-2.1, MV/PMV 1.4-1.75, MV/SV 1.5-1.8, PMV/SV 0.95-1.1.

Metasoma imbricate; dorsal surface of T2 glabrate basally. Posterior margin of T2-T4 with very slight medial incision.

MALE. Length 1.4-2.2 mm. Coloration as in female except pedicel brown; metasoma dark brown to black except pleural and sternal region in posterior half may be brown to yellow. F1-F6 with short dorsal projections extending length of segment (fig.7). Projection on F1 tallest; projections decreasing in height distally.

DISTRIBUTION. CANAL ZONE, MEXICO: [?]Nuevo Leon.

BIOLOGY AND HOSTS. According to label data from *Inga* legume (Fabaceae; Mimosoidea).

MATERIAL EXAMINED. Holotype ♀, CANAL ZONE, Barro Colorado Island, iv.1939, *Inga* legume (USNM, point).

103♀, 54♂ paratypes. As holotype (81♀, 43♂ USNM. 2♀, 1♂: BMNH, CNC, LAS, UCR, AEI, MLP, TAMU, ANIC, QMB, PPRI, ZIL).

Non-type material. MEXICO, [?]Nuevo Leon: Monterrey, [Laredo P.O.E., intercepted by agricultural inspectors], 7.ix.1960, tree seed pod (1♀, 1♂, USNM).

ETYMOLOGY. From the Latin *hirtus*, meaning hairy, and *coxa*; referring to the densely setose hind coxa.

***Tanaoneura matamata* LaSalle, sp. n.**

Figures 37, 110.

DIAGNOSIS. Females of *T. matamata* are distinguished from other *Tanaoneura* by the following characters: hind coxa densely covered with silver to white setae over entire dorsal surface; mesosoma with many silver to white setae; dorsum of metasoma entirely brown; club white, in contrast to brown funicle.

FEMALE. Length 2.0-3.4 mm. Head dark brown to black except narrow, longitudinal, yellow to light brown stripe bordering ventral half of inner eye

orbit; similar stripe bordering entire outer eye orbit; face lateral to clypeus may be lighter brown than rest of face and frons. Scape yellow to light brown, darkened dorsally, with small, translucent ventral expansion apically. Pedicel and anelli light brown to brown; F1-F5 dark brown; F6 brown to yellow or white; club yellow to white. Mesosoma dark brown to black except tegula anteromedially and prepectus ventrally light brown to white. Coxae and femora brown; femora apically, tibiae and tarsi yellow to white; tibiae may have dusky to brown markings of varying size. Metasoma dark brown except the following areas white to yellow: longitudinal, lateral stripe and venter apically; T7 posteriorly and medially; T8 except area around cercal plates. Ovipositor sheaths brown after issuing from metasoma.

Head (fig.37) 1.25-1.35 times wider than high. Lateral ocellus nearer to median ocellus than to eye margin (OOL/LOL 2.0-2.3). Scrobal impression coriaceous to imbricate, margins abrupt. Interantennal projection acute dorsally, extending less than half the distance from torulus to median ocellus. Subocular suture incomplete, only present just ventral to eye. Face and frons coriaceous to imbricate with many large, shallow, setiferous punctures; the setae silvery white.

Antenna with scape 3.5-3.9 times longer than wide, with small ventral expansion apically. Pedicel 1.15-1.45 times longer than wide. A1 subequal in length to, slightly narrower than A2. All funicular segments longer than wide. Club 2.3-2.8 times longer than wide.

Mesosoma with mesoscutum reticulate to imbricate; scutellum imbricate to coriaceous. Propodeum very lightly sculptured to glabrate medially, without median carina; callus imbricate. Mesopleuron (fig.110) reticulate to imbricate. Sternopleural suture not reaching anterior margin of mesopleuron, not distinctly connected to mesopleural suture. Hind coxa densely covered with many silver to white setae on both dorsal and ventral surfaces.

Wings hyaline, veins brown. Forewing with marginal fringe extending past apex of wing, but not reaching postmarginal vein. Basal cell with 16-25 setae. CC/MV 2.2-2.6, MV/PMV 1.75-2.25, MV/SV 1.35-1.8, PMV/SV 0.65-0.85.

Metasoma reticulate to imbricate; T2 glabrate basally. T2 with medial line. Posterior margin of T2 with small medial incision.

MALE. Length 1.85 mm. Coloration as in female. Funicular segments with short, fat dorsal projections.

DISTRIBUTION. BRAZIL: Para.

BIOLOGY AND HOSTS. According to label data, reared from seeds of matamata tree. This tree is probably *Eschweilera matamata* (Lecythidaceae).

MATERIAL EXAMINED. Holotype ♀, BRAZIL, Para, Belem, xii.1962, Paul Ledoux, ex. seeds matamata tree (USNM, point).

14♀, 1♂ paratypes. As holotype (8♀, 1♂, USNM. 1♀: BMNH, CNC, LAS, UCR, AEI, MLP).

ETYMOLOGY. From the matamata tree; referring to the common name of the host plant.

Tanaoneura darwini LaSalle, sp. n.

DIAGNOSIS. Females of *T. darwini* are distinguished from other *Tanaoneura* by the following characters: hind coxa densely covered over entire dorsal surface with silver to white setae; metasoma entirely black to dark brown; antenna entirely black; entire dorsal surface of metasoma glabrate; ovipositor exerted for a distance about 1/4 the length of metasoma.

FEMALE. Length 2.9 mm. Black to dark brown with the following areas yellow to light brown: scape; mandibles; small spot on tegula; small spot anteriorly on prepectus; mesosternum posteriorly; middle coxa posteriorly; trochanters; femora apically; tibiae; tarsi; apex of metasoma ventrally; and ovipositor sheaths.

Head 1.25 times wider than high. Lateral ocellus nearer to median ocellus than to eye margin (OOL/LOL 2.0). Scrobal impression deep, reticulate to imbricate, with well defined lateral margins. Interantennal projection narrowly rounded apically, extending slightly less than 1/2 the distance from toruli to median ocellus. Subocular sulcus extending over 1/2 the distance from eye to oral fossa, but weak ventrally. Frons and face lightly imbricate, with large, shallow, setiferous punctures; setae small and white.

Antenna with scape 4.7 times longer than wide with small ventral expansion apically. Pedicel 1.5 times longer than wide. A1 subequal in length to, slightly narrower than, A2. All funicular segments longer than wide, decreasing in length distally. Club 2.6 times longer than wide.

Mesosoma with mesoscutum imbricate-rugose, with several very poorly defined puncture-like areas. Notauli in the form of several punctures separated by small, transverse carinae. Scutellum and axilla reticulate. Propodeum with carina just medial to spiracle and several weak carina near the middle, but no single distinct medial carina. Mesopleuron strigulate anteriorly, glabrate posteriorly. Sternopleural suture not reaching anterior margin of mesopleuron, connected to mesopleural suture. Entire dorsal surface of hind coxa covered with silver to white setae.

Wings hyaline, veins brown. Forewing with marginal fringe extending past apex of wing, but not reaching postmarginal vein. Basal cell with 21-23 setae. CC/MV 2.1, MV/PMV 1.55, MV/SV 1.8, PMV/SV 1.15.

Metasoma glabrate dorsally, coriaceous laterally and ventrally. Posterior margin of T2-T4 with slight medial incisions. Ovipositor exertion slightly over 1/4 the length of metasoma.

MALE. Unknown.

DISTRIBUTION. COSTA RICA.

BIOLOGY AND HOSTS. Unknown.

MATERIAL EXAMINED. Holotype ♀, COSTA RICA, Monte Verde, T-B, 13-17.iii, H.M. Powell (UCD, point).

This species known only from the holotype.

ETYMOLOGY. Named for Charles Darwin.

Tanaoneura flavilineata LaSalle, sp. n.

Figure 154.

DIAGNOSIS. Females of *T. flavilineata* are distinguished from other *Tanaoneura* by the following characters: dorsal surface of hind coxa sparsely setose, bare in basal half (fig.154); metasoma black, T2 with transverse, medial, yellow stripe dorsally; notauli complete; mesopleuron with at least some reticulate sculpture.

FEMALE. Length 2.1-2.15 mm. Head black, brown near oral fossa. Scape light brown to yellow, slightly darkened dorsoapically, with small, translucent, ventral expansion apically; remainder of antenna dark brown to black. Mesosoma black, except posterior margin of prepectus brown to light brown. Coxae, femora, fore tibia, middle and hind tibiae basally black to dark brown; femora basally, knees, middle and hind tibiae apically and tarsi light brown to yellow; middle and hind tibiae may have more extensive dusky to brown markings. Metasoma black, T2 with transverse, medial, yellow stripe dorsally. Ovipositor sheaths black.

Head 1.2-1.3 times wider than high. Lateral ocellus nearer to eye margin than to median ocellus (OOL/LOL 0.45-0.5). Scrobal impression glabrate ventrally, lightly imbricate dorsally; margins abrupt. Interantennal projection acute dorsally, extending less than half the distance from torulus to median ocellus. Subocular sulcus incomplete, only present just ventral to eye. Face reticulate to imbricate; clypeus and frons coriaceous to imbricate. Face and frons with many large, shallow, setiferous punctures; setae silvery white.

Antenna with scape 5.2-5.55 times longer than wide, with small ventral expansion apically. Pedicel 1.45-1.55 times longer than wide. A1 subequal in length to, slightly narrower than A2. All funicular segments longer than wide. Club 2.75-2.8 times longer than wide.

Mesosoma dorsally reticulate to imbricate with many shallow, setiferous punctures; setae dark. Notauli complete. Propodeum lightly reticulate, without median carina. Mesopleuron reticulate to imbricate anteriorly, strigulate posteriorly. Sternopleural suture not reaching anterior margin of mesopleuron, connected to mesopleural suture. Dorsal surface of hind coxa sparsely setose, bare in basal half (fig.154).

Wings hyaline, veins light brown. Forewing with marginal fringe extending past apex of wing, but not reaching postmarginal vein. Basal cell with 19-22 setae. CC/MV 1.65-1.8, MV/PMV 2.15-2.25, MV/SV 2.4-2.5, PMV/SV 1.1-1.15.

Metasoma reticulate to imbricate, T2 glabrate basally. Posterior margin of T2 and T3 with slight medial incision.

MALE. Unknown.

DISTRIBUTION. TRINIDAD.

BIOLOGY AND HOSTS. Unknown.

MATERIAL EXAMINED. Holotype ♀, TRINIDAD, St. George, El Tucuche, s. slope, rainforest, 25.viii.1976, J.S. Noyes (BMNH, card).

1 ♀ paratype. As holotype (1 ♀, BMNH).

ETYMOLOGY. From the Latin *flavus*, meaning yellow, and *lineatus*, meaning of a line; referring to the transverse yellow stripe on T2.

Tanaoneura maculiventris (Gomes), comb. n.

Minapis maculiventris Gomes, 1941:143-144. Holotype ♀, BRAZIL, Bahia, Caravelas (IOC) [examined].

DIAGNOSIS. Females of *T. maculiventris* are distinguished from other *Tanaoneura* by the following characters: dorsal surface of hind coxa sparsely setose, bare in basal half; metasoma dark brown dorsally, base of T2 yellow; notauli incomplete; mesopleuron strigulate to glabrate, without reticulate sculpture.

FEMALE. Length 1.85-2.7 mm. Head dark brown to black; longitudinal yellow stripe bordering ventral half of eye margin on both frons and occiput; light brown to yellow area bordering oral fossa on either side of clypeus. Scape yellow to light brown, slightly darkened dorsally and apically, and with small, translucent, ventral expansion apically. Pedicel brown, light brown apically; remainder of antenna dark brown to black. Mesosoma dark brown to black, except prepectus posteriorly, tegula, and humeral plate anteromedially light brown. Coxae and femora brown; fore tibia yellow dorsally, brown ventrally; middle and hind tibiae and tarsi yellow. Metasoma dark brown dorsally, except base of T2 yellow; brown to light brown laterally. Ovipositor sheaths yellow.

Head 1.15-1.25 times wider than high. Lateral ocellus about equidistant from eye margin and median ocellus (OOL/LOL 0.9-1.1). Scrobal impression rugose, with sharp lateral margin which extends to median ocellus. Interantennal projection acute dorsally, extending less than half the distance from toruli to median ocellus. Subocular sulcus complete,

may be faint ventrally. Face and frons imbricate with large, shallow setiferous punctures; the setae silvery white.

Antenna with scape 5.2-5.8 times longer than wide. Pedicel 1.5-1.9 times longer than wide. A1 subequal in length and width to A2. All funicular segments longer than wide; decreasing slightly in length distally. Club 2.1-2.6 times longer than wide.

Mesosoma with mesoscutum imbricate to rugose with large, shallow, setiferous punctures; scutellum imbricate to reticulate with large, shallow, setiferous punctures. All mesosomal setae brown to black. Notauli incomplete, neither meeting nor reaching the posterior margin of the mesoscutum. Propodeum with several medial carinae, with strong transverse carina posterior to spiracle. Mesopleuron strigulate, may be glabrate posteriorly. Sternopleural suture not reaching anterior margin of mesopleuron, connected to mesopleural suture. Dorsal surface of hind coxa sparsely setose, bare in basal half.

Wings hyaline, veins light brown to yellow. Forewing with marginal fringe extending to postmarginal vein. Basal cell with 29-37 setae. CC/MV 2.0-2.15, MV/PMV 1.2-1.55, MV/SV 1.3-1.5, PMV/SV 0.95-1.05.

Metasoma imbricate, dorsal surface of T2 glabrate basally. Posterior margin of T2-T4 with very slight medial incision.

MALE. Length 1.75 mm. Coloration as in female except femora yellow apically, tibiae yellow. Antenna very similar to female, with only very slight dorsal projections.

DISTRIBUTION. BRAZIL: Bahia.

BIOLOGY AND HOSTS. Reared from galls on *Inga* sp. (Fabaceae; Mimosoidea). Gomes (1941:143-144) briefly discusses the galls. He states that they are similar to those produced by *Minapis nigra*. They are globose, and many wasps emerge from a single gall.

MATERIAL EXAMINED. Holotype ♀, BRAZIL, Bahia, Caravelas, iv.1929, Gregorio Bondar, galls on *Inga* sp (IOC, vial 348, point).

Allotype ♂. As holotype (IOC, vial 348, same point as holotype).

Paratypes. As holotype (13♀, vials 347-349, slides 836-837, IOC).

COMMENTS. Gomes designated types in his original description, however his specimens in IOC lack appropriate labels. As the best female specimen is mounted on the same point with the unique male (allotype), I am assuming that it is the holotype. I have labeled these specimens accordingly, and the rest of the type series as paratypes. One female eurytomid is mixed in with the type series.

Tanaoneura incompleta LaSalle, sp. n.

DIAGNOSIS. Females of *T. incompleta* are distinguished from other *Tanaoneura* by the following characters: dorsal surface of hind coxa

sparsely setose, bare in basal half; metasoma black to dark brown dorsally, base of T2 yellow; notauli incomplete; mesopleuron strigulate to glabrate, without reticulate sculpture.

FEMALE. Length 2.0 mm. Head and mesosoma black to dark brown. Scape and pedicel light brown to yellow, slightly darkened dorsally; anelli and F1 light yellow [antenna missing past F1]. Femora apically, tibiae and tarsi light brown to yellow. Metasoma black to dark brown, base of T2 yellow. Ovipositor sheaths and T8 apically yellow to light brown.

Head 1.2 times wider than high. Lateral ocellus slightly nearer to median ocellus than to eye margin (OOL/LOL 1.15). Scrobal impression with well defined lateral margin. Interantennal projection small, extending less than 1/4 the distance from torulus to median ocellus. Subocular sulcus incomplete, represented only by a shallow depression just ventral to eye. Face and frons imbricate to reticulate, with large, shallow, setiferous punctures.

Antenna with scape 4.2 times longer than wide. Pedicel 1.5 times longer than wide. A1 subequal in width to, slightly shorter than A2. F1 longer than wide. [Antenna missing past F1.]

Mesosoma with mesoscutum and axilla imbricate, scutellum coriaceous; both with large, shallow, setiferous punctures. Notauli incomplete, neither meeting nor reaching posterior margin of mesoscutum. Propodeum lightly reticulate, with median carina. Mesopleuron strigulate anteriorly, glabrate to lightly imbricate posteriorly. Sternopleural suture not reaching anterior margin of mesopleuron, connected to mesopleural suture. Dorsal surface of hind coxa sparsely setose, bare in basal half.

Wings hyaline, veins light brown. Forewing with marginal fringe extending to postmarginal vein. Basal cell with 18-20 setae. CC/MV 1.85, MV/PMV 3.85, MV/SV 2.5, PMV/SV 0.65.

Metasoma reticulate to imbricate, T2 glabrate basally. Posterior margin of T2-T4 with slight medial incision.

MALE. Unknown.

DISTRIBUTION. VENEZUELA.

BIOLOGY AND HOSTS. Unknown.

MATERIAL EXAMINED. Holotype ♀, VENEZUELA, Aragua, Rancho Grande, 700 m, 9.ix.1970, Bechyne (BMNH, card).

This species known only from the holotype.

ETYMOLOGY. From the Latin *in-*, meaning not, and *completus*, meaning finished; referring to the incomplete notauli.

Tanaoneura inexacta LaSalle, sp. n.

Figure 148.

DIAGNOSIS. Females of *T. inexacta* are distinguished from other *Tanaoneura* by the following characters: dorsal surface of hind coxa sparsely setose; metasoma entirely black to dark brown; funicle white, club infumated; forewing with marginal and postmarginal veins swollen at junction of stigmal vein (fig.148); postmarginal vein very short, less than half the length of stigmal vein (within *Tanaoneura* only *T. inexacta* has these last two characters).

FEMALE. Length 2.6 mm. Head and body black to dark brown. Scape and pedicel light brown to yellow, slightly darkened dorsally; anelli and funicular segments light yellow to white; club dusky. Fore tibia brown, tarsi light brown; middle and hind tibiae and tarsal segments 1-4 light yellow, apical tarsal segment brown.

Head 1.2 times wider than high. Lateral ocellus nearer to median ocellus than to eye margin (OOL/LOL 1.6). Scrobal impression reticulate to imbricate, with medial, longitudinal carina dorsally, and well defined lateral margins. Interantennal projection prominent, acute dorsally, extending slightly over 1/3 the distance from torulus to median ocellus. Subocular sulcus incomplete, represented only by shallow depression just ventral to eye margin. Face and frons with large, setiferous punctures; setae dark.

Antenna with scape 4.4 times longer than wide. A1 subequal in length and width to A2. F1-F5 longer than wide, F6 subequal in length and width. Club 1.7 times longer than wide.

Mesosoma dorsally coriaceous with large, setiferous punctures. Propodeum glabrate, with longitudinal median carina and transverse carina medial to spiracle; callus lightly imbricate. Mesopleuron strigulate anteriorly, glabrate posteriorly. Sternopleural suture not reaching anterior margin of mesopleuron, not or only faintly connected to indistinct mesopleural suture. Dorsal surface of hind coxa sparsely setose.

Wings hyaline, veins light brown. Forewing with marginal fringe extending to postmarginal vein. Basal cell with 30-31 setae. Postmarginal vein very short, less than half the length of stigmal vein (fig.148). CC/MV 1.8, MV/PMV 6.15, MV/SV 2.65, PMV/SV 0.45.

Metasoma imbricate, T2 glabrate basally. Posterior margin of T2-T5 with very slight medial incision.

MALE. Unknown.

DISTRIBUTION. BRAZIL. The exact locality for this specimen is unknown. There are at least two Rio Guapores in Brazil, and probably many more San Miguels.

BIOLOGY AND HOSTS. Unknown.

MATERIAL EXAMINED. Holotype ♀, BRAZIL, [state unknown], Rio Guapore, nr. S. Migul [probably San Miguel], 22.viii.1909 (USNM, point).

This species known only from the holotype.

ETYMOLOGY. From the Latin *in-*, meaning not, and *exactus*, meaning precise; referring to the exact location of the type locality being unknown.

***Tanaoneura ashmeadi* Howard**

Tanaoneura ashmeadi Howard, 1897:147. Holotype ♀, WINDWARD ISLANDS, Grenada (BMNH, #5.1157) [examined].

DIAGNOSIS. Females of *T. ashmeadi* are distinguished from other *Tanaoneura* by the following characters: dorsal surface of hind coxa sparsely setose; scape light brown to yellow, remainder of antenna brown; dorsum of metasoma predominantly reticulate to strigulate, only glabrate basally on T2; postmarginal vein longer than marginal vein (a character unique to this species).

T. ashmeadi is very closely related to *T. portoricensis* (see discussion under this species).

FEMALE. Length of head and mesosoma 1.0 mm [metasoma missing]. Head and mesosoma black to dark brown. Scape light brown to yellow, darkened dorsally, with small, translucent, ventral expansion apically; remainder of antenna brown. Femora mainly brown; coxae apically, trochanters, femora basally and apically, tibiae and tarsi light brown to yellow. Fore tibia with some dusky coloration.

Head 1.25 times wider than high. Lateral ocellus nearer to median ocellus than to eye margin (OOL/LOL 1.55). Scrobal impression reticulate. Interantennal projection acute dorsally, extending less than half the distance from torulus to median ocellus. Subocular sulcus faint, extending slightly over half the distance from eye to oral fossa. Frons and face imbricate with large, shallow, setiferous punctures. Punctures with small silver to white setae.

Antenna with scape 4.75 times longer than wide, with small, ventral expansion apically. Pedicel 1.45 times longer than wide. A1 subequal in length and width to A2. All funicular segments longer than wide, subequal to each other in length and width. Club 2.45 times longer than wide.

Mesosoma dorsally reticulate. Mesoscutum slightly rugose; scutellum with a few punctures. Propodeum reticulate with a pair of median carinae. Mesopleuron strigulate anteriorly, glabrate posteriorly. Sternopleural suture not reaching anterior margin of mesopleuron, connected to mesopleural suture.

Wings hyaline, veins light brown to yellow. Marginal fringe extending to postmarginal vein. Basal cell with 21 setae. Postmarginal vein longer than marginal vein. CC/MV 2.45, MV/PMV 0.9, MV/SV 1.05, PMV/SV 1.15.

Metasoma missing.

MALE. Unknown.

DISTRIBUTION. WINDWARD ISLANDS: Grenada.

BIOLOGY AND HOSTS. Unknown.

MATERIAL EXAMINED. Holotype ♀, WINDWARD ISLANDS, Grenada, Mirabeau Estate, (Windward side), H.H. Smith (BMNH, point).

This species known only from the holotype.

DISCUSSION. *T. ashmeadi* and *portoricensis* are very closely related. The only character which separates them is the extremely long postmarginal vein (longer than the marginal vein) in *ashmeadi*. Such a long postmarginal vein is unknown in other tanaostigmatids. *T. ashmeadi* is known from a single female, and this character may just be an aberration in this specimen, but further material is necessary to be certain one way or the other.

Tanaoneura portoricensis (Crawford), comb. n.
Figures 118,177.

Tanaostigmodes portoricensis Crawford, 1913:247. Lectotype ♀ (present designation), PUERTO RICO, Mayaguez (USNM, #15315) [examined].

DIAGNOSIS. Females of *T. portoricensis* are distinguished from other *Tanaoneura* by the following characters: dorsal surface of hind coxa sparsely setose, may have a single line of setae in basal half; dorsum of metasoma dark brown; scape and pedicel light brown to yellow, remainder of antenna brown; dorsum of metasoma predominantly reticulate to strigulate, only glabrate basally on T2; postmarginal vein shorter than marginal vein.

T. portoricensis is very closely related to *T. ashmeadi* (see discussion under that species).

FEMALE. Length 1.6-2.35 mm. Head and mesosoma brown to dark brown. Area around oral fossa, dorsum of mesosoma laterally, and anterodorsal pleural region of mesosoma light brown to yellow. Scape and pedicel light brown to yellow, darkened dorsally; scape with small, translucent, ventral expansion apically; remainder of antenna brown. Femora mainly brown; coxae at least apically, trochanters, femora basally and apically, tibiae and tarsi light brown to yellow. Metasoma dark brown dorsally and laterally, light brown to yellow ventrally; ovipositor sheaths light brown to yellow.

Head 1.15-1.3 times wider than high. Lateral ocellus nearer to median ocellus than to eye margin (OOL/LOL 1.2-1.45). Scrobal impression reticulate. Interantennal projection acute dorsally, extending slightly less than half the distance from torulus to median ocellus. Subocular suture complete, but may be faint. Frons and face imbricate, with large, shallow, setiferous punctures; punctures with small, silver to white setae.

Antenna with scape 4.6-5.15 times longer than wide, with small ventral expansion apically. Pedicel 1.25-1.7 times longer than wide. A1 subequal in length and width to A2. All funicular segments longer than wide, subequal to each other in length and width. Club 2.0-2.5 times longer than wide.

Mesosoma dorsally reticulate. Mesoscutum slightly rugose; scutellum may have a few punctures. Propodeum reticulate, with one or two median carinae; submedial carina may be present. Mesopleuron (fig.118) strigulate anteriorly, glabrate posteriorly. Sternopleural suture not reaching anterior margin of mesopleuron, connected to mesopleural suture. Dorsal surface of hind coxa sparsely setose, may have a single line of setae in basal half.

Wings hyaline, veins light brown to yellow. Forewing with marginal fringe reaching or nearly reaching postmarginal vein. Basal cell with 10-23 setae. CC/MV 1.9-2.5, MV/PMV 1.3-1.75, MV/SV 1.35-1.75, PMV/SV 1.0-1.1.

Metasoma reticulate to imbricate; T2 glabrate basally.

MALE. Length 1.65-1.75 mm. Coloration as in female. Funicular segments as in female, except very slightly produced dorsally.

VARIATION. Specimens from Brazil are darker than the Caribbean material. Coloration for these females is as follows. Head dark brown to black. Scape yellow to light brown, slightly darkened dorsoapically, with small, translucent, ventral expansion apically. Remainder of antenna dark brown to black. Mesosoma dark brown to black, except tegula anteromedially light brown to yellow. Coxae and femora brown; trochanters, femora basally and apically, tibiae and tarsi light brown to yellow. Metasoma brown to dark brown; ovipositor sheaths light brown to yellow, dark brown apically. The main difference is the absence of light brown to yellow markings on the head, pleural region of the mesosoma, and metasoma. Additionally, the lateral ocellus is slightly closer to the median ocellus in the Brazilian specimens (OOL/LOL 1.65-2.0) than in the Caribbean specimens (OOL/LOL 1.2-1.45).

DISTRIBUTION. COSTA RICA, PUERTO RICO, VIRGIN ISLANDS, BRAZIL: Santa Catarina.

BIOLOGY AND HOSTS. Reared from seed and pulp of *Inga* sp. (Fabaceae: Mimosoidea). The Virgin Island material is reared from *Inga laurina* seeds. The specimens are accompanied by a small packet containing several loose seeds and one seed still contained in a small portion of pod. The seeds are oval, 10-15 mm long. Galls (fig.177) are 2-3 mm long, suboval, and around the perimeter of the seeds, usually clustered in bunches of 2-6 galls.

MATERIAL EXAMINED. Lectotype ♀, PUERTO RICO, Mayaguez, 27.i.1910, C.W. Hooker (USNM, point).

Paralectotypes: as lectotype (2♀, USNM). There was a male as part of the type series, but this specimen is missing from the point, which is still in the USNM.

Non-type material. PUERTO RICO: Mayaguez, 19.i.1933, A.G. Harley, reared from *Inga* sp. (3♀, 2♂, USNM); Mayaguez, 24.iii.1932, A.G. Harley, *Inga* seed and pulp (2♀, 1♂, USNM). VIRGIN ISLANDS: St. Thomas, Ex Sta, 24.iii.1941, seeds *Inga laurina* in pods, lot no. 41-12079 (5♀, USNM. 1♀: CNC, LAS, UCR, AEI). COSTA RICA: Guanacaste, Santa Rosa Park, 8.ix.1977, 8.v.1978 & 16.vii.1978, D.H. Janzen, riparian (2♀, 1♂, AEI). BRAZIL, Santa Catarina: Nova Teutonia, ix.1943, F. Plaumann (3♀, BMNH).

Genus *MICROPROBOLOS*, gen. n.

Type species: *Microprobolos titan*, sp. n.

DIAGNOSIS. Females of the genus *Microprobolos* are distinguished from other tanaostigmatids by the following characters: head and mesosoma with large, setiferous punctures (fig.52); all funicular segments longer than wide (fig.83); interantennal projection small (fig.52); propodeum somewhat elongate with a strong median carina, and very strong plicae which converge and meet before the posterior margin of the propodeum (fig.116) (a character unique to this genus).

FEMALE. Head and mesosoma black, metasoma yellow with black markings. Head and mesosoma with silver to white setae in addition to black ones.

Head with large, setiferous punctures. Interantennal projection very small.

Antenna with scape more than 3.5 times longer than wide, with small ventral expansion apically. Funicular segments all longer than wide. Club short, truncate apically.

Mesosoma dorsally with large, well-defined, setiferous punctures. Propodeum somewhat elongate with a strong median carina, and very strong plicae which converge and meet before the posterior margin of the propodeum. Mesopleuron strongly strigulate to rugose.

Wings hyaline, forewing with faint infuscation beneath marginal vein. Stigmal vein curved, at distinct angle to postmarginal vein.

Metasoma glabrate basally, remainder lightly sculptured.

MALE. Unknown.

ETYMOLOGY. From the Greek *mikros*, meaning small, and *probolos*, meaning a projection; referring to the small interantennal projection. Gender masculine.

DISCUSSION. *Microprobolos* is most closely related to *Tanaoneura*. They share two derived characters: large, setiferous punctures, and antennae with all funicular segments longer than wide. The large punctures only appear in one other New World tanaostigmatid (*Tanaostigmodes punctus*) and that is undoubtedly due to convergence. They are treated as separate genera because each has a derived character not found in the other. *Tanaoneura* has the large, prominent interantennal projection, and *Microprobolos* has the unique propodeum (fig.116) which is somewhat lengthened with a strong median carina and very strong plicae which meet before the posterior margin of the propodeum. They are considered to be sister groups.

Microprobolos presently contains a single species, *Microprobolos titan*, sp. n.

***Microprobolos titan* LaSalle, sp. n.**

Figures 52,83,116,132.

DIAGNOSIS. Females of *M. titan* are distinguished from other tanaostigmatids by the following characters: head and mesosoma with large, setiferous punctures (fig.52); all funicular segments longer than wide (fig.83); interantennal projection small (fig.52); propodeum somewhat elongate with a strong median carina, and very strong plicae which converge and meet before the posterior margin of the propodeum (fig.116); silver to white setae present on head and mesosoma in addition to dark setae; hind coxa densely covered with silver to white setae over entire dorsal surface.

FEMALE. Length 2.6-3.4 mm. Head black. Antenna dark brown to black except scape yellow. Mesosoma black except tegula with brown markings. Coxae and legs black to dark brown except knees, tibiae apically, and tarsi light brown to yellow. Metasoma yellow; T3 with transverse dark brown band which joins longitudinal dark brown band present laterally from T3 (sometimes T2) to T7; T7 with dark brown spot medially. Some silvery white setae present on head and mesosoma in addition to dark ones.

Head (fig.52) 1.2-1.3 times wider than high. Lateral ocellus about equidistant from eye margin and median ocellus (OOL/LOL 0.9-1.2). Scrobal impression rugose. Interantennal projection very small, barely projecting into scrobal impression. Subocular sulcus complete. Face and frons imbricate to coriaceous with large, setiferous punctures; the setae silvery white.

Antenna (fig.83) with scape 4.2-4.9 times longer than wide. Pedicel 1.4-1.8 times longer than wide. A2 slightly longer and wider than A1. All funicular segments slightly longer than wide; F1 longest, each successive segment slightly shorter than preceding one. Club short, conical, truncate apically, 1.4-1.9 times longer than wide.

Mesosoma dorsally coriaceous to imbricate with large, setiferous punctures; some of the setae silvery white. Notauli meeting medially, may continue to posterior margin of mesoscutum. Propodeum (fig.116)

somewhat elongate with a strong median carina, and very strong plicae which converge and meet before the posterior margin of the propodeum; callus with numerous long silvery white setae. Mesopleuron strigate, with median rugose patch. Entire dorsal surface of hind coxa densely covered with silver to white setae.

Wings hyaline, veins yellow to light brown. Forewing (fig.132) with faint infuscation posterior to marginal vein. Marginal fringe extending past apex of wing, not reaching postmarginal vein. Basal cell with 15-24 setae. CC/MV 1.5-1.8, MV/PMV 1.7-2.2, MV/SV 2.1-2.2, PMV/SV 1.0-1.2.

Metasoma with T2 glabrate dorsally; remainder of metasoma lightly sculptured, reticulate to imbricate. Posterior margin of T2 with slight medial incision.

MALE. Unknown.

VARIATION. In Mexican specimens the notauli meet, but are separated from the posterior margin of the mesoscutum by several large punctures, and there is no longitudinal brown stripe laterally on T2 basal to the transverse stripe. In Brazilian specimens the notauli can be traced between the punctures to the posterior margin of the mesoscutum, and there is a longitudinal brown stripe on T2 basal to the transverse stripe. The holotype (from Costa Rica) is intermediate, with junctions of the mesoscutal punctures forming a line from where the notauli meet and the posterior margin of the mesoscutum, and a short, incomplete longitudinal brown stripe on T2 basal to the transverse stripe.

DISTRIBUTION. MEXICO: San Luis Potosi, Campeche; COSTA RICA; BRAZIL: Guanabara.

BIOLOGY AND HOSTS. Unknown.

MATERIAL EXAMINED. Holotype ♀, COSTA RICA, Puntarenas, Manuel Antonio National Park, coastal rain forest, 23-28.viii.1986, L. Masner (CNC, point).

4♀ paratypes. MEXICO, Campeche: 10 km W. Xpujil, Chicanna, 13.vii.1983, M. Kaulbars (1♀, CNC). MEXICO, San Luis Potosi: El Salto, 1700', 21.viii.1954, Univ. Kan. Mex. Exp. (1♀, KU). BRAZIL, Guanabara: Represa Rio Grande, vii.1972, F.H. Oliveira (1♀, CNC; 1♀, USNM).

ETYMOLOGY. The Greek Titan, a child of Uranus and Gaea, symbolic of strength and large size; referring to the large, robust body form.

UNPLACED GENERA AND SPECIES OF NEW WORLD TANAOSTIGMATIDAE.

The following genera and species remain unplaced because type material, or other material assignable to them has not been examined, and they can not be placed from their descriptions.

Kieffer & Jörgensen (1910) described four species of Tanaostigmatidae (as Encyrtidae) in two genera. They make no comment on the disposition of their types, and it is not clear what has become of this material. Dr. Luis De Santis, the leading South American expert on Chalcidoidea, has previously searched for their type material and considers it to be lost (personal communication). One of the genera (*Dendrosema*) and two of the species (*D. coeruleus* and *D. albosquamatum*) could be placed through their descriptions, the other genus and two species remain unplaced.

GENERA

Cubaniella Russo, 1930:133-134. Type species *Cubaniella trotteri* Russo, 1930, by original designation.

Liebeliella Kieffer & Jörgensen, 1910:380. Type species *Liebeliella pleuralis* Kieffer & Jörgensen, 1910, by monotypy.

SPECIES

Dendrosema albitarse Kieffer & Jörgensen, 1910:423-424. Type material (♀ ♂), ARGENTINA [?lost].

Reared from galls on *Prosopis alpataco* (Fabaceae: Mimosoidea).

Minapis bicolor Gomes, 1941:144-145. Holotype ♀, BRAZIL, Rio de Janeiro.

Described from 5♀, 9♂ (holotype, allotype, and paratypes) Distrito Federal [=Estado do Rio], Guaratiba, from galls on petioles and leaves of an unidentified plant.

Gomes stated that type material was in "Gabinete de Entomologia da Escola Nacional de Agronomia, Rio de Janeiro". I was unable to locate and borrow this material.

Liebeliella pleuralis Kieffer & Jörgensen, 1910:380-381. Type material (♂), ARGENTINA [?lost].

Reared from galls on *Condalia lineata* (Rhamnaceae).

Minapis pseudonigra Gomes, 1945:128-129. Holotype ♀, BRAZIL, Rio de Janeiro.

Described from 3♀ (holotype and paratypes), D. Federal [=Estado do Rio], x.1943, from galls on unknown plant.

Gomes stated that the holotype was in his collection, and paratypes in "Gabinete Entomologico da E. N. de Agronomia. Rio de Janeiro." I was unable to locate and borrow this material.

Cubaniella trotteri Russo, 1930:134-139 (as *Cubaniella Trotteri*). Type material (♀), CUBA.

Described from galls on *Belaira mucronata* (Fabaceae; Faboidea).

Russo stated that type material was in "Coll. R. Labor. Entom. Portici". I was unable to ascertain whether or not this material is in this collection in Portici.

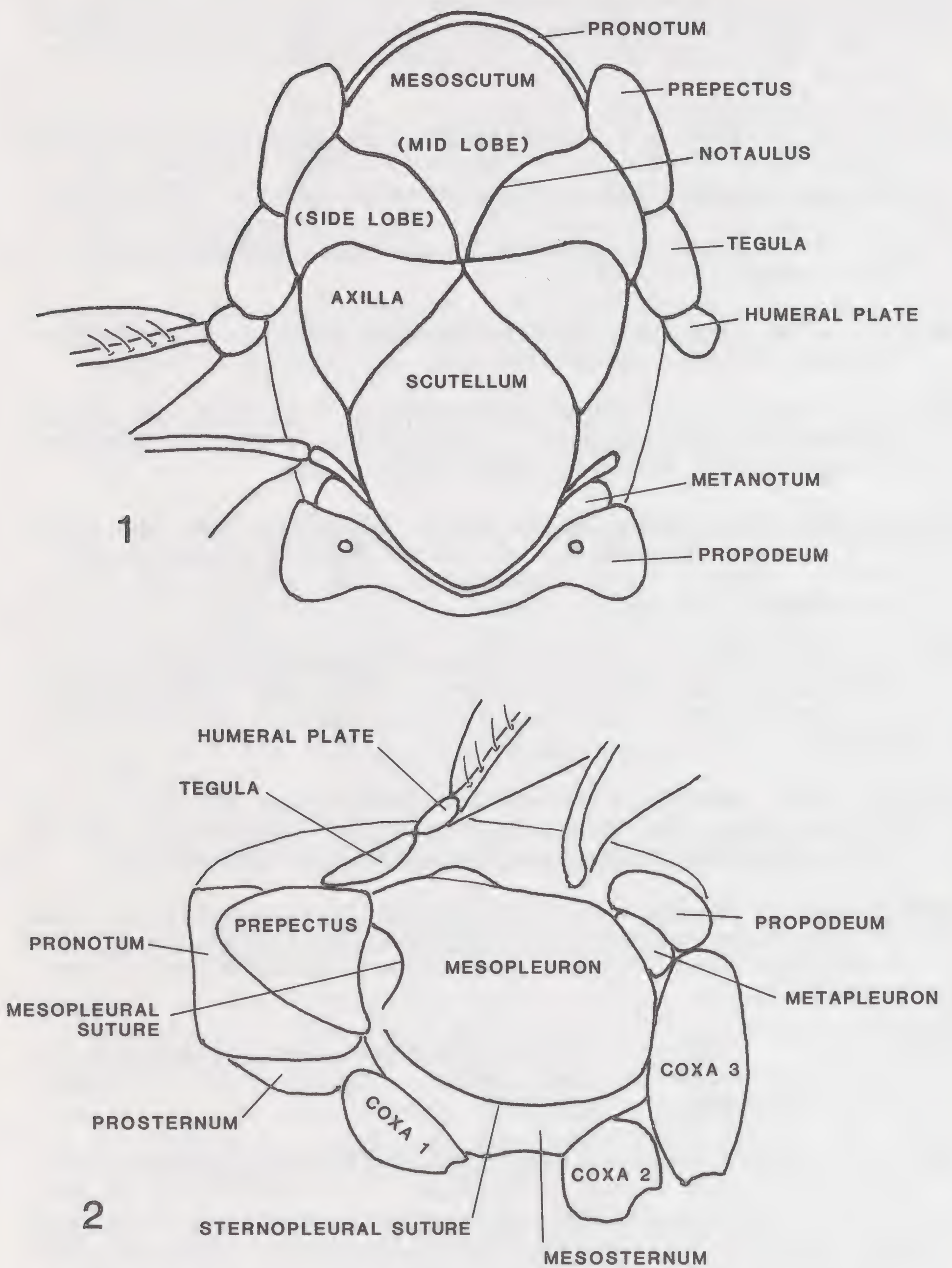
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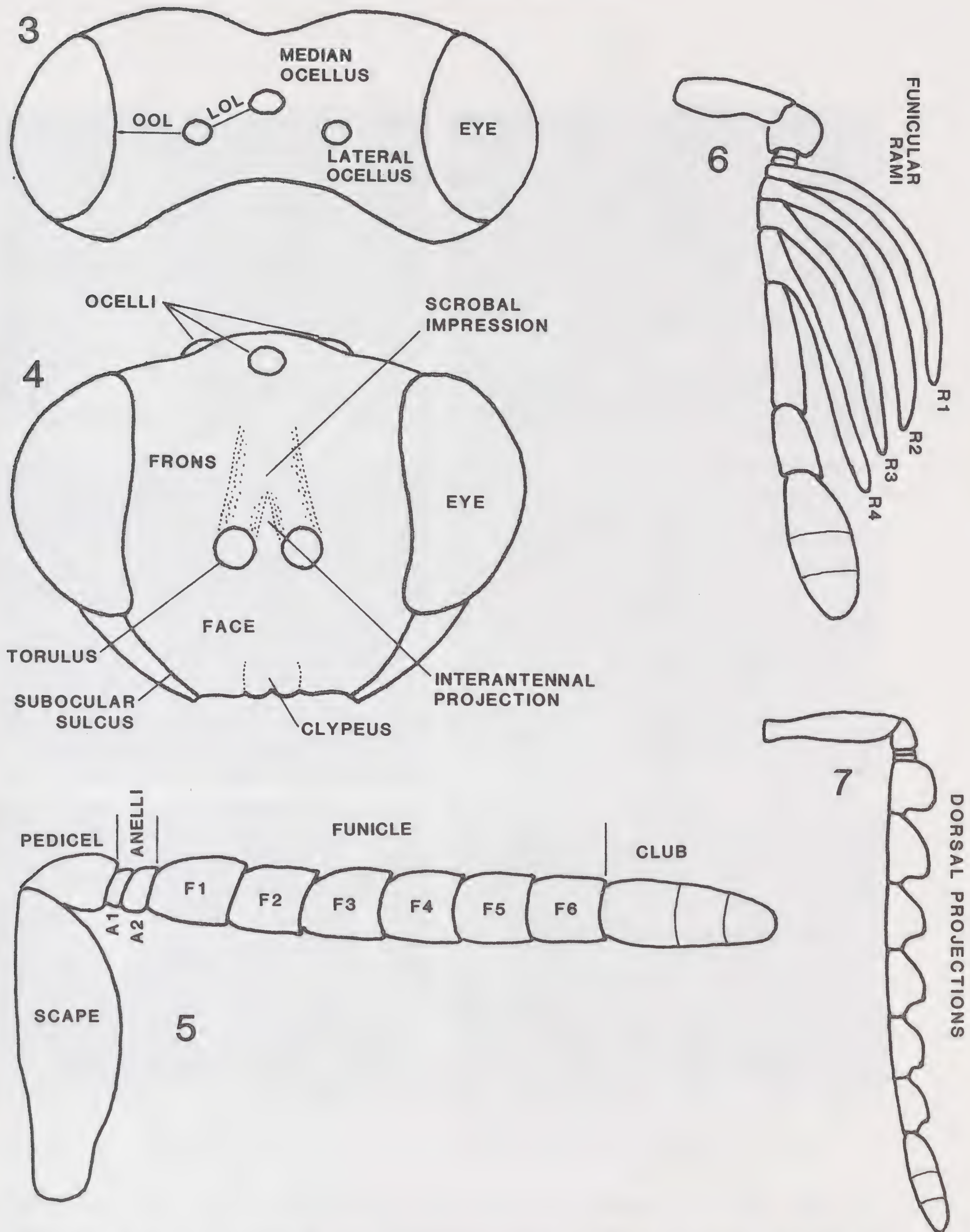
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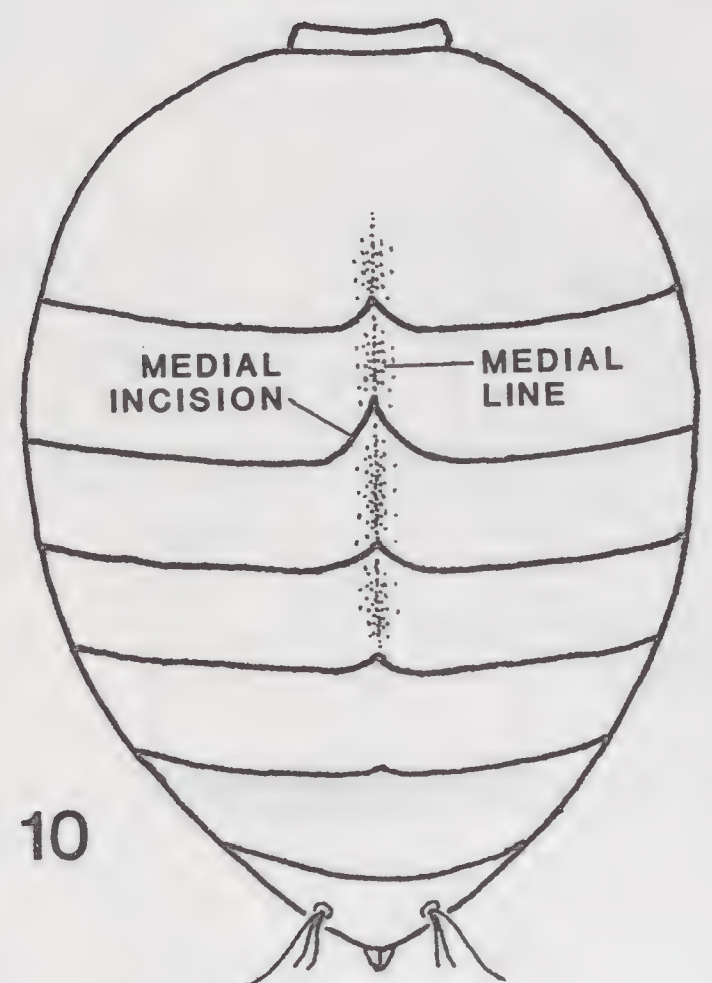
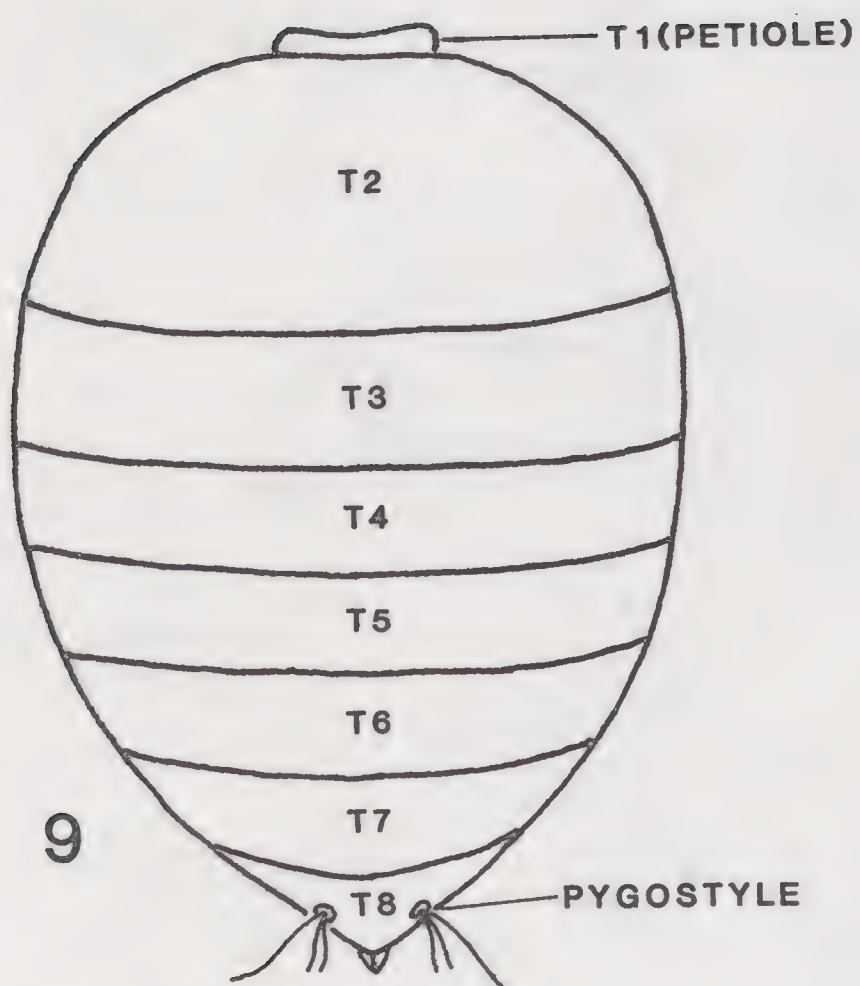
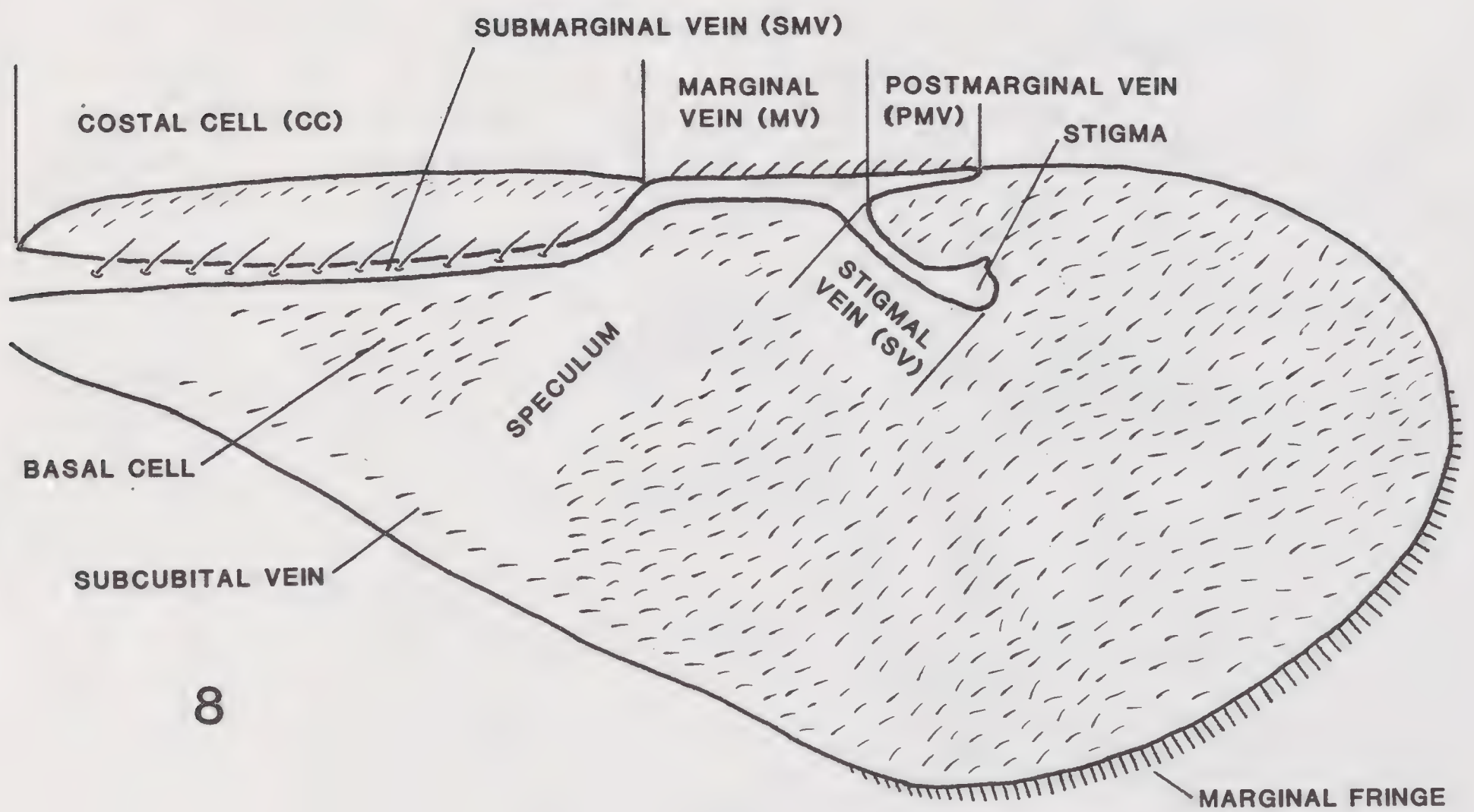
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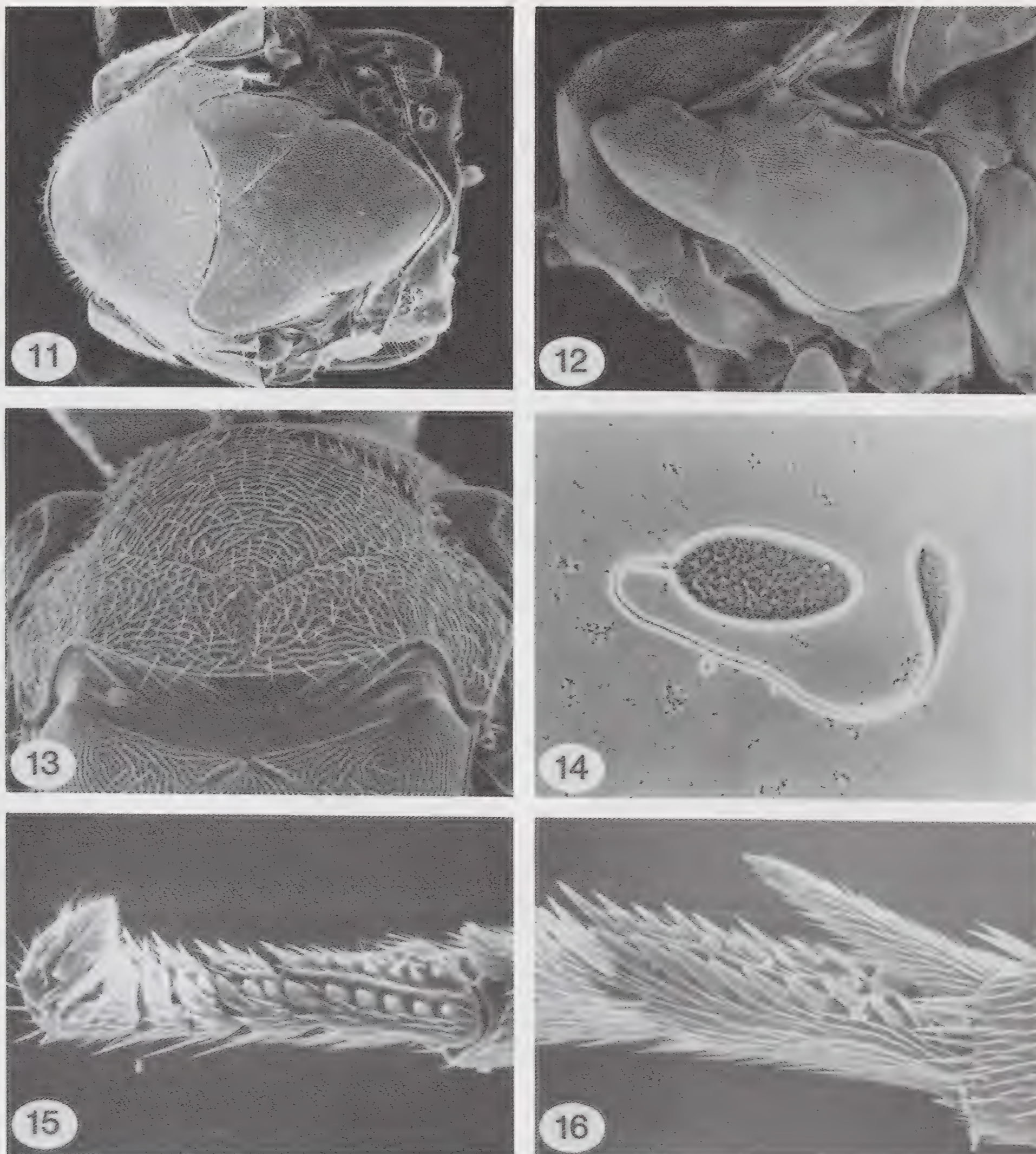
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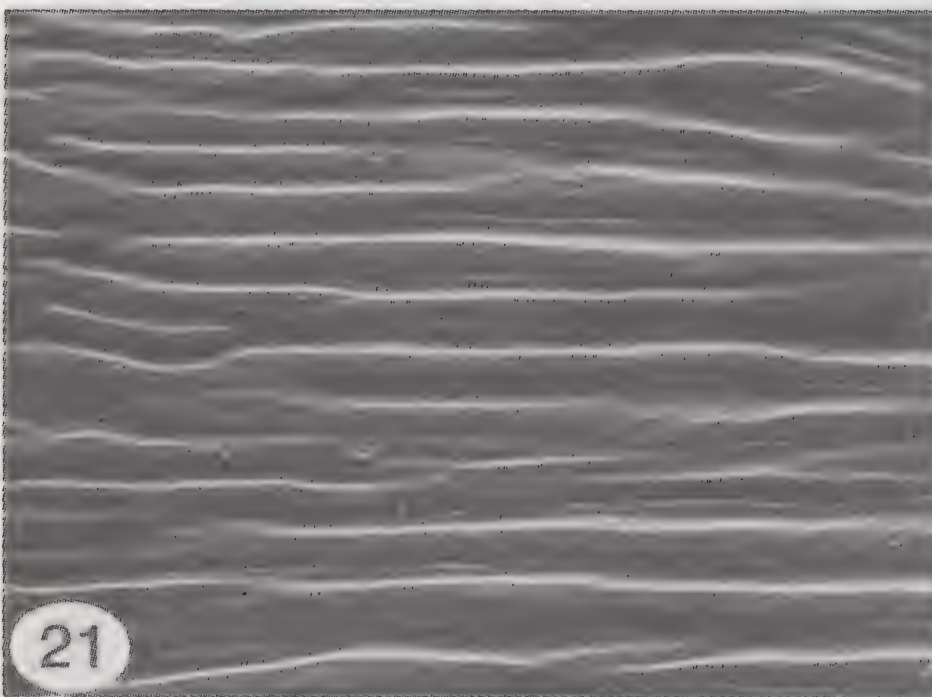
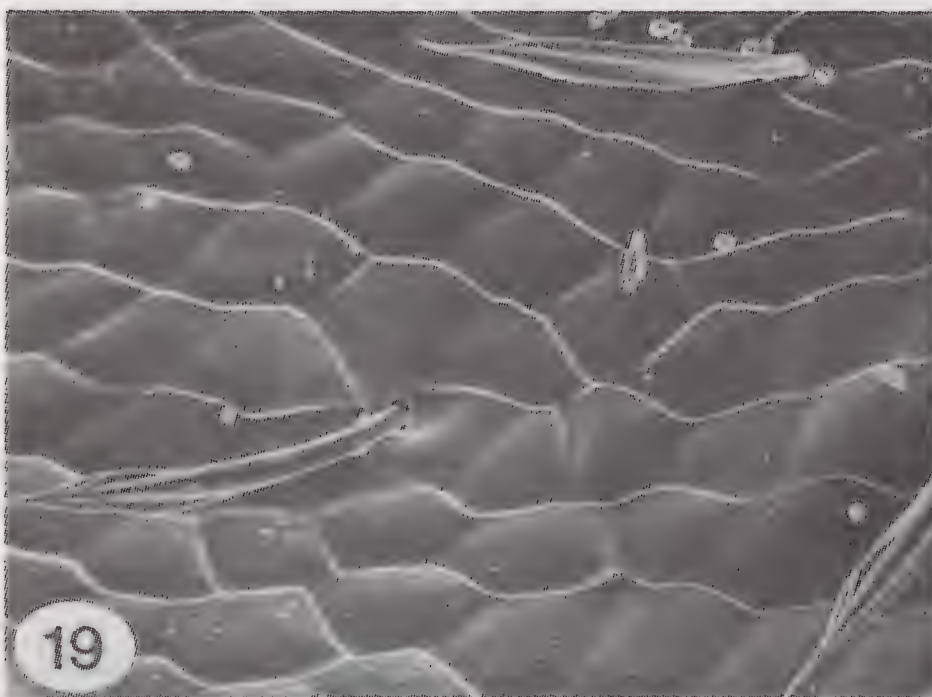
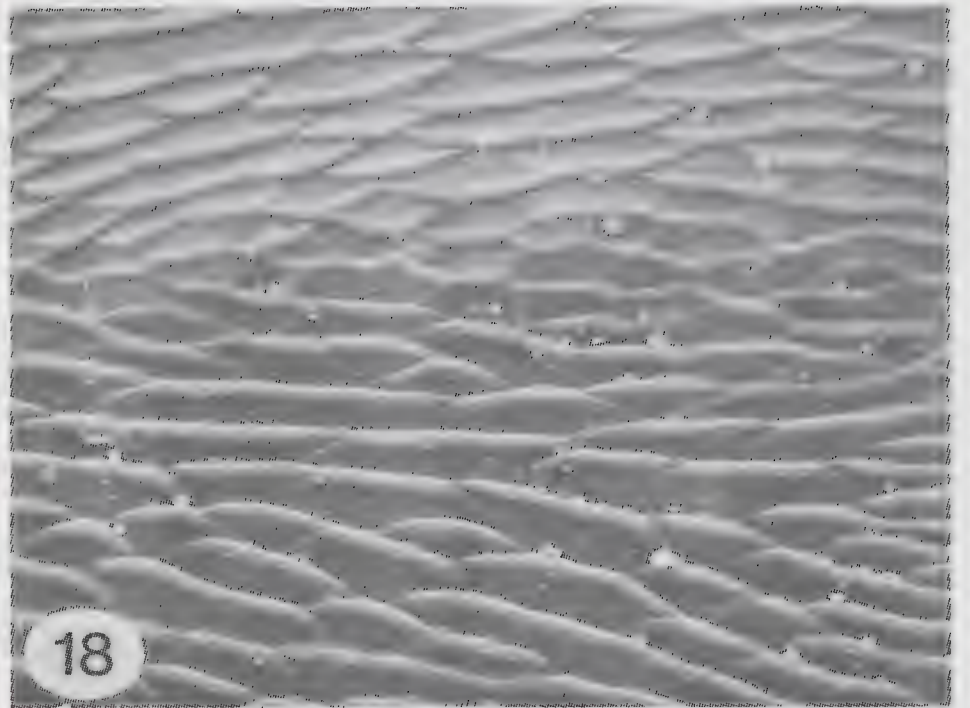
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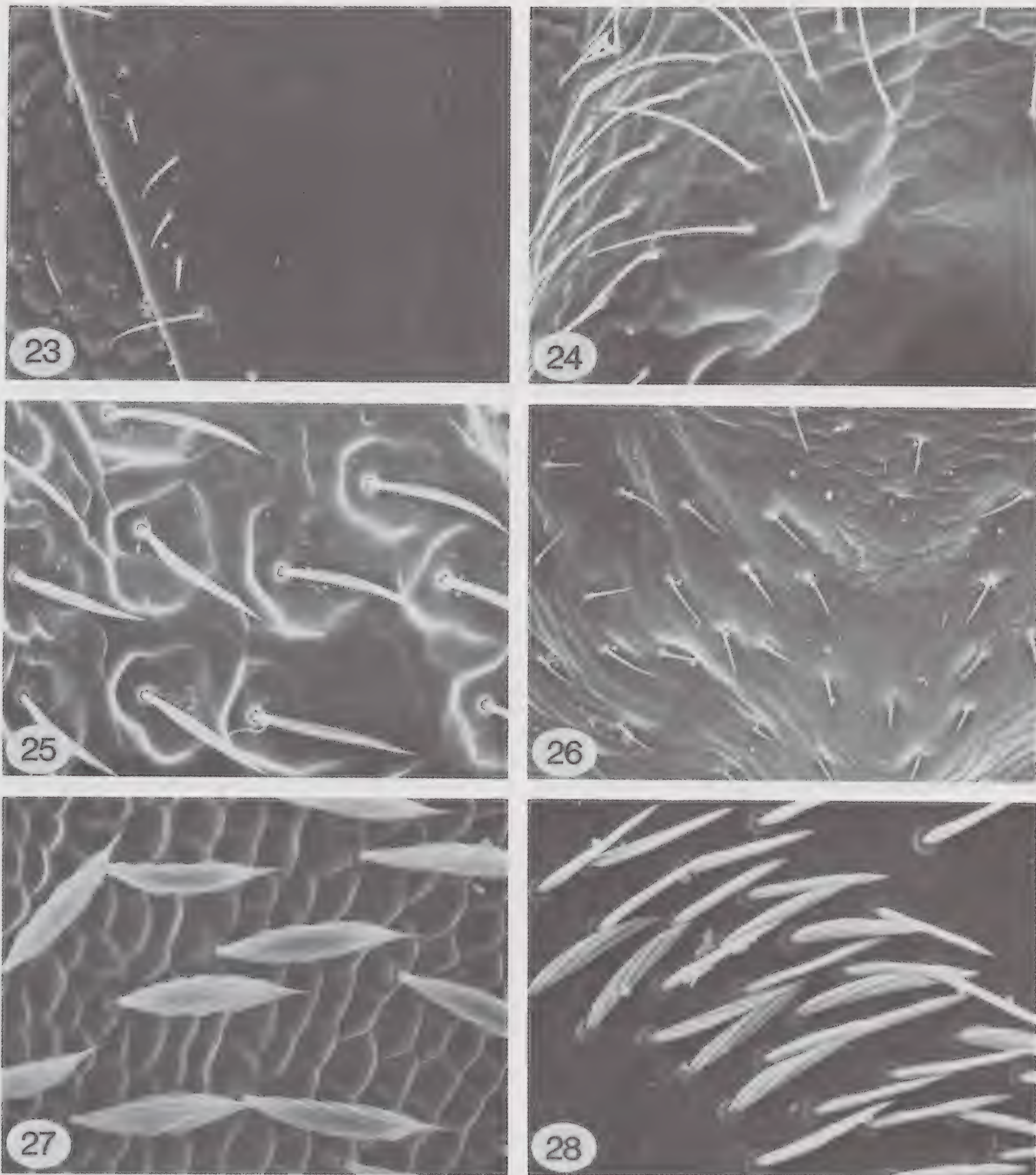
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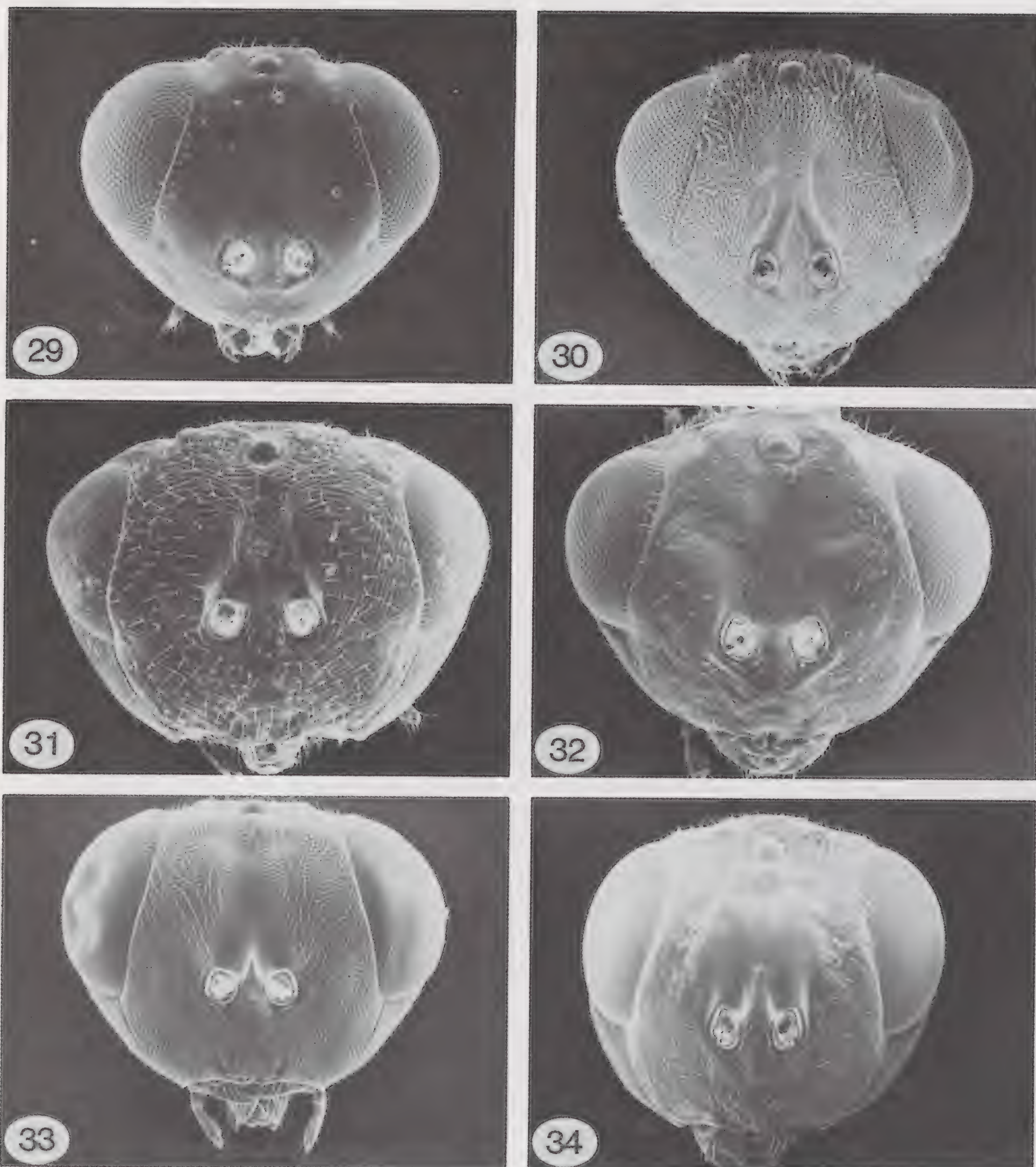
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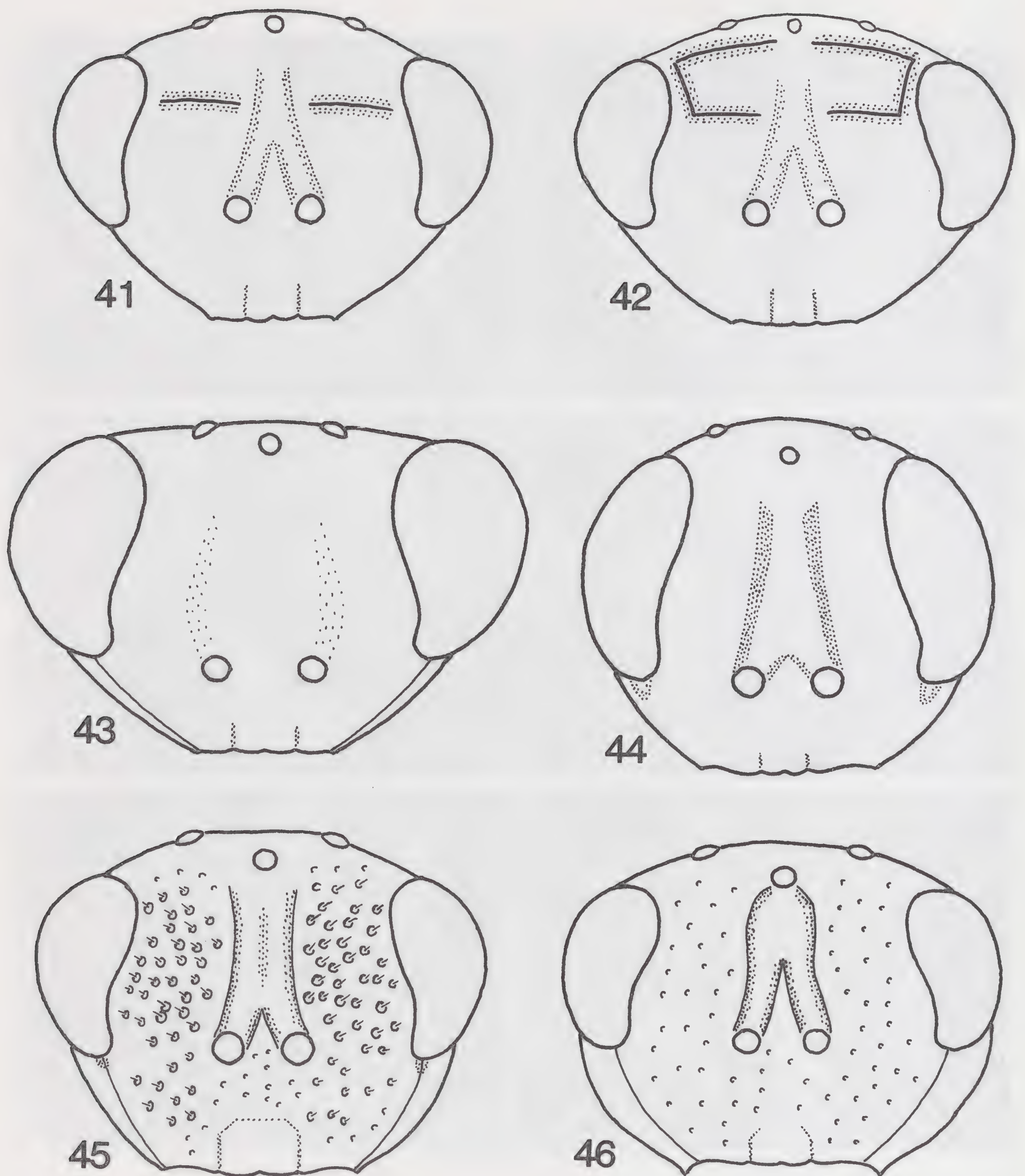
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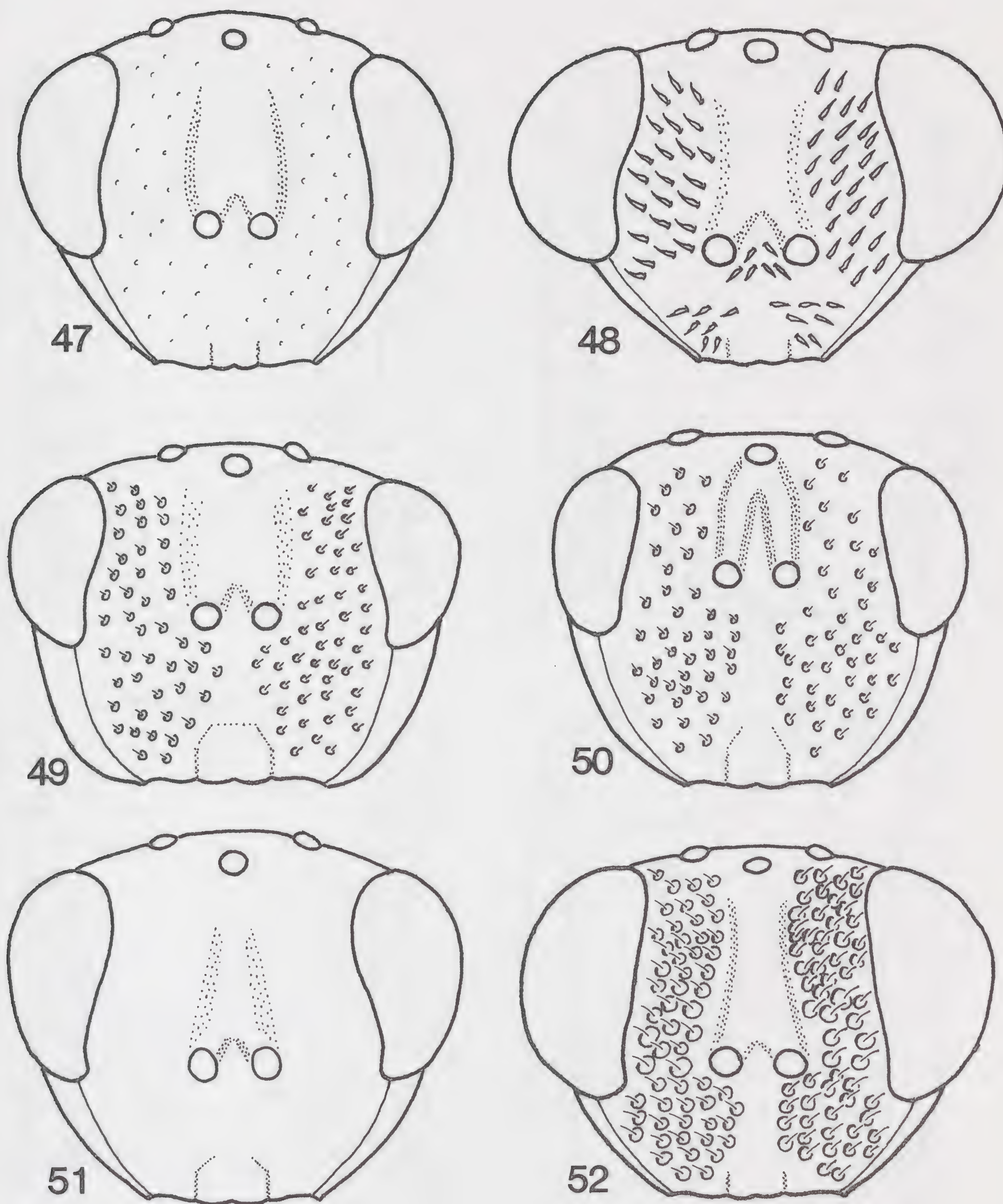
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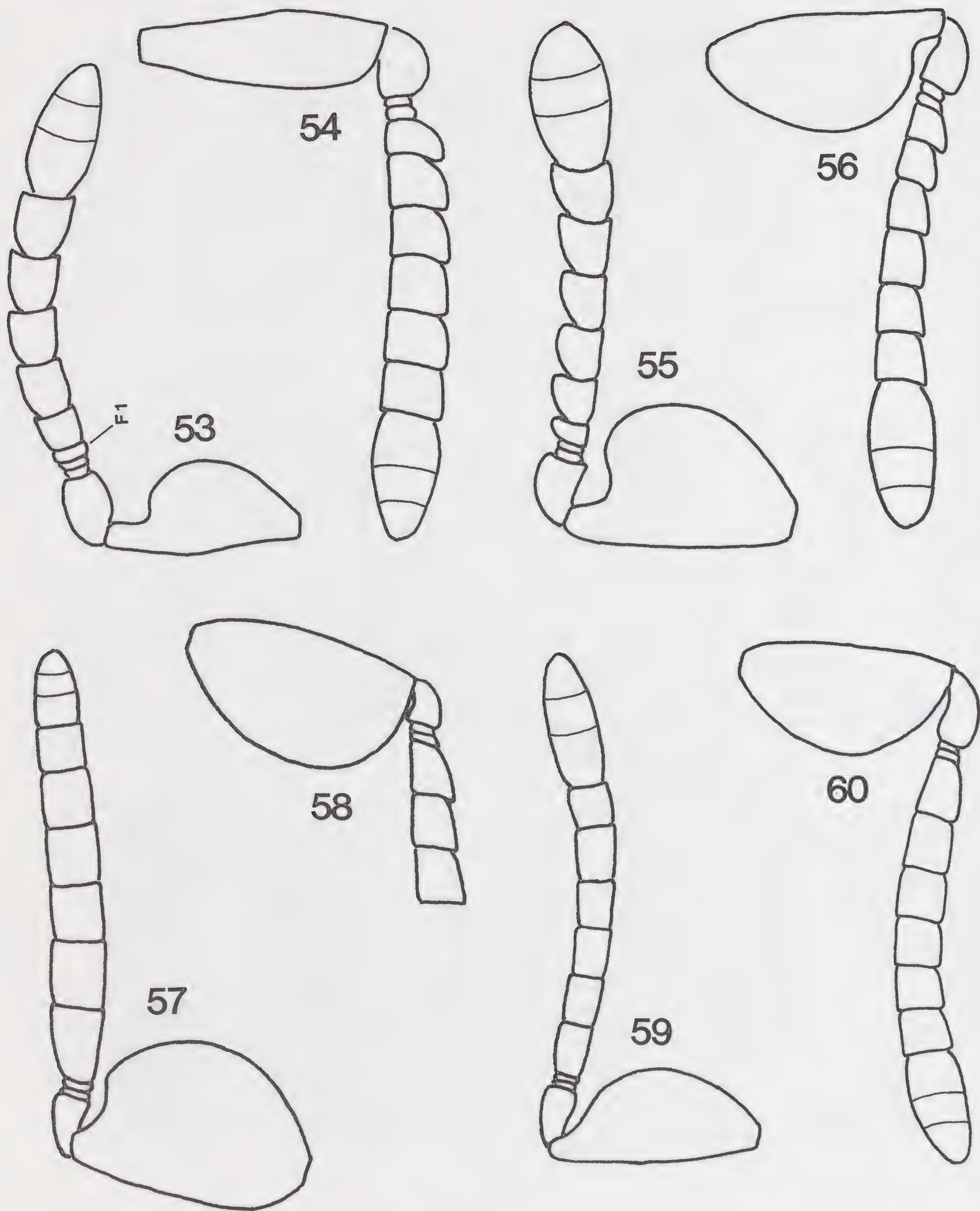
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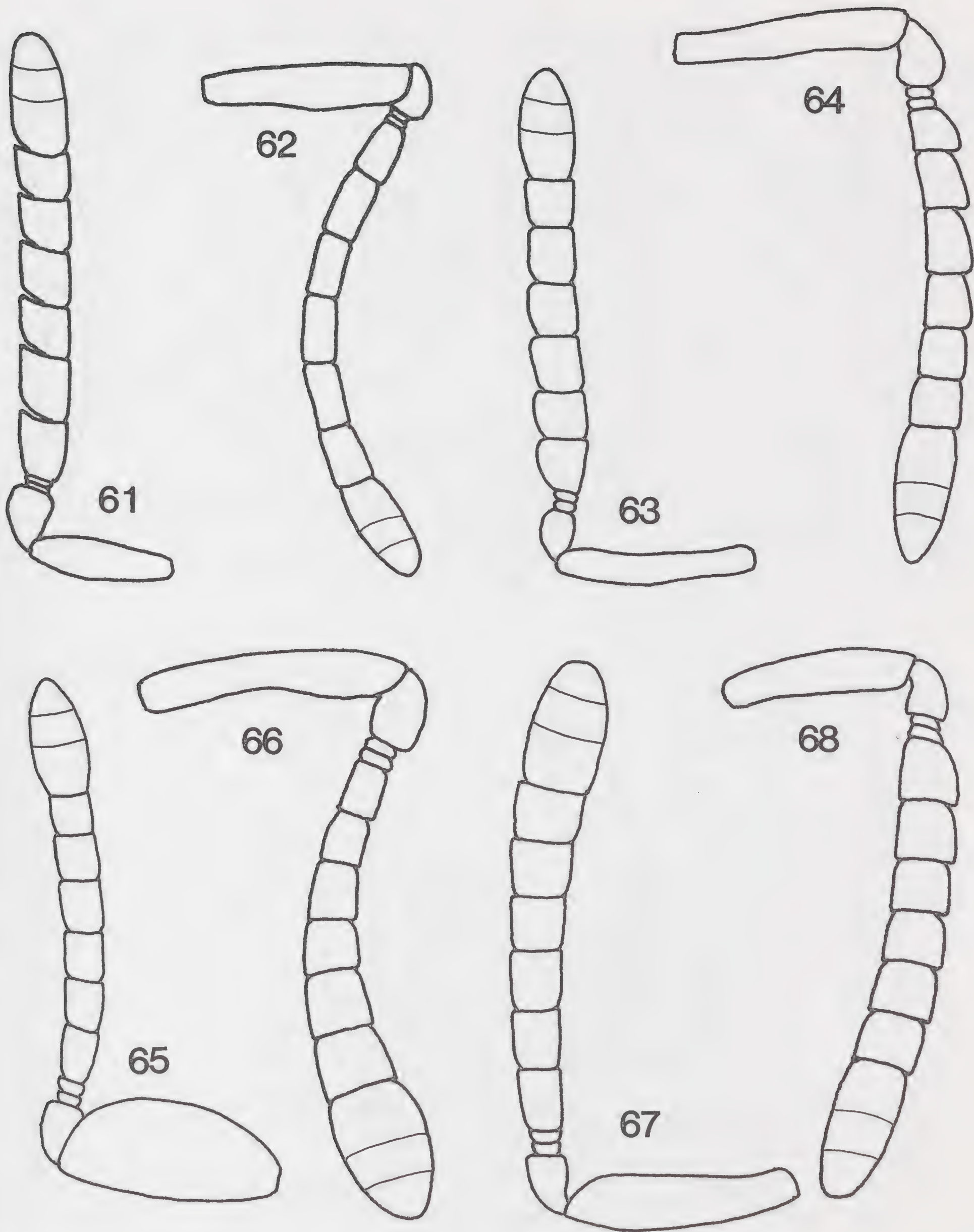
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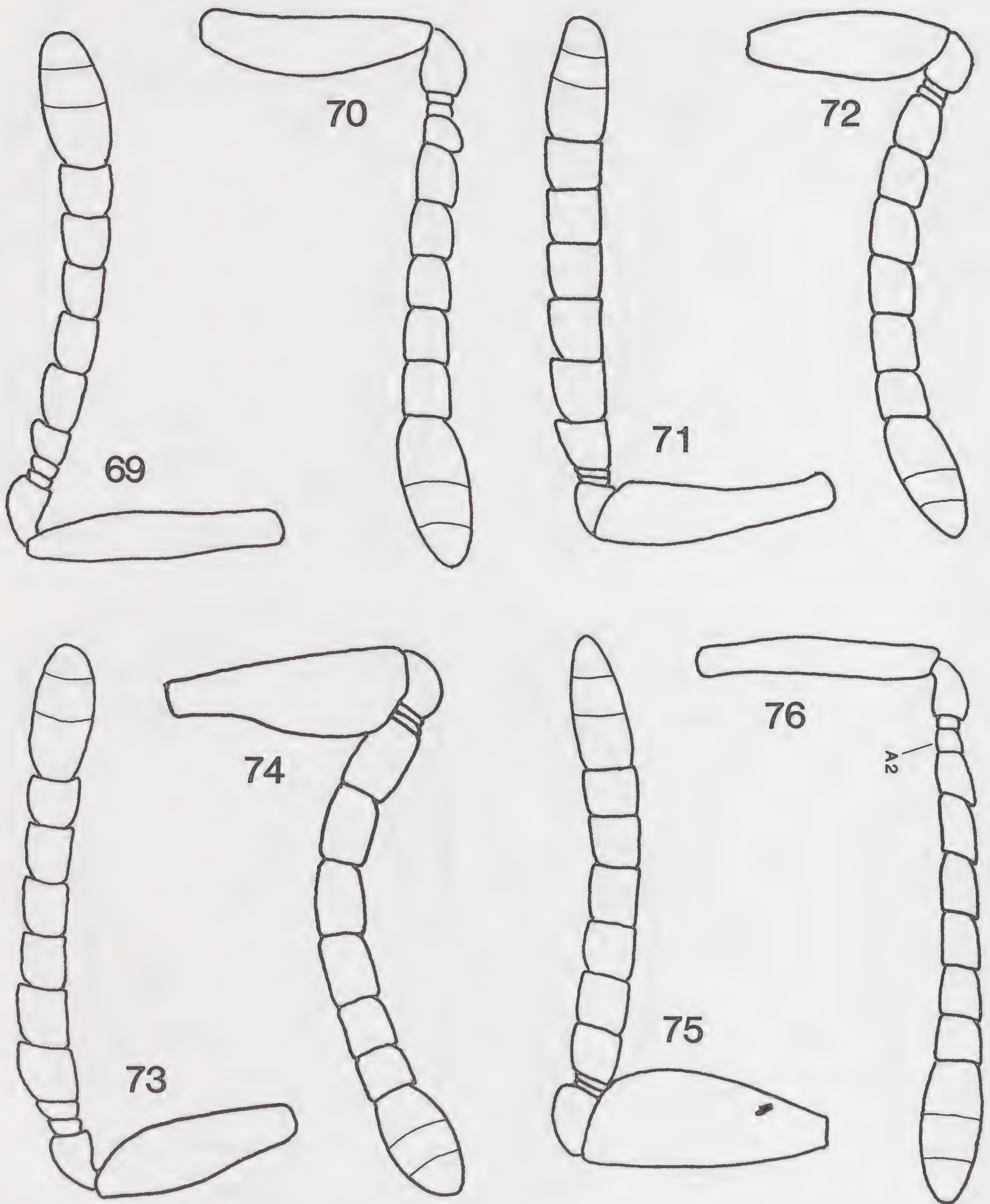
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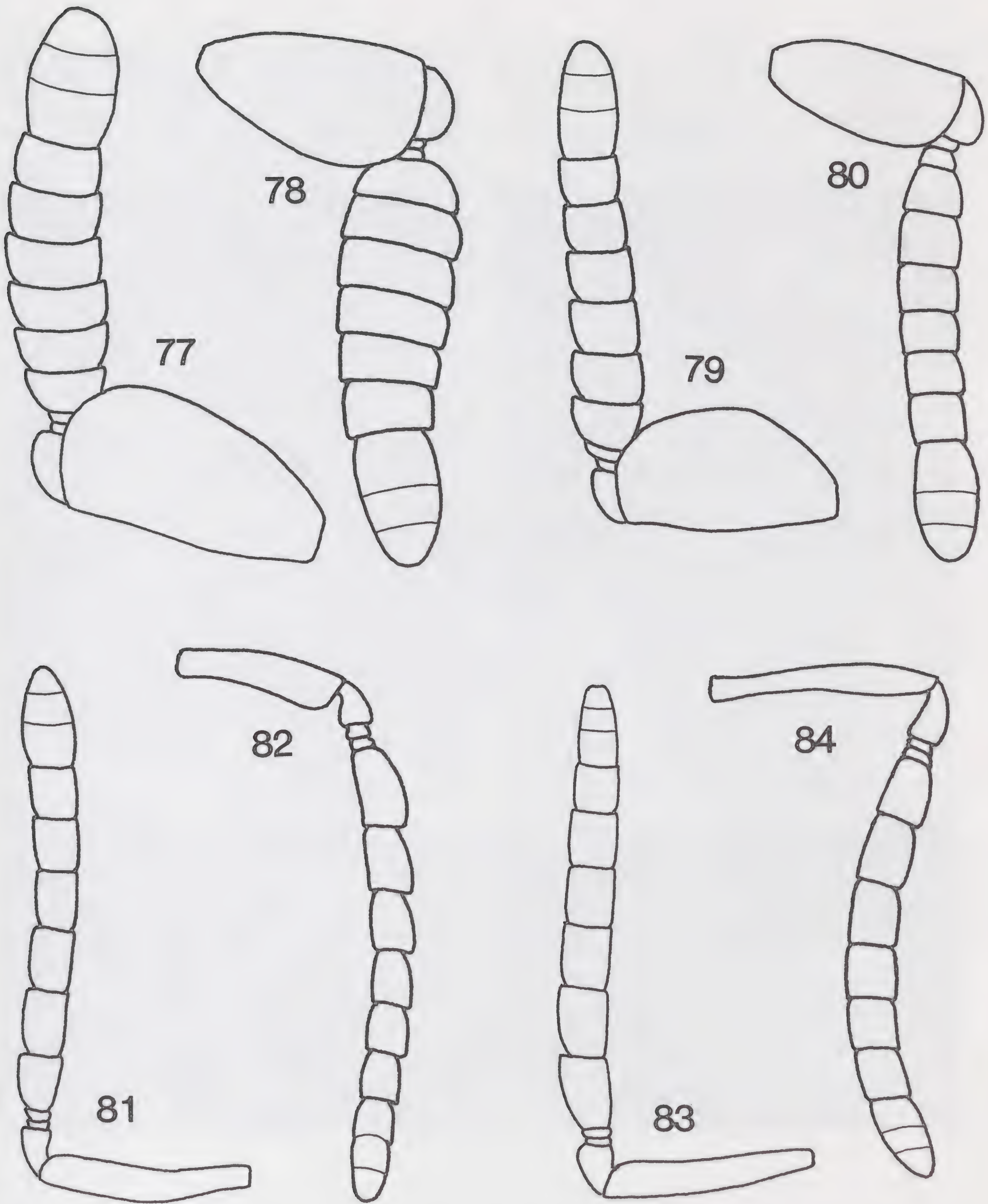
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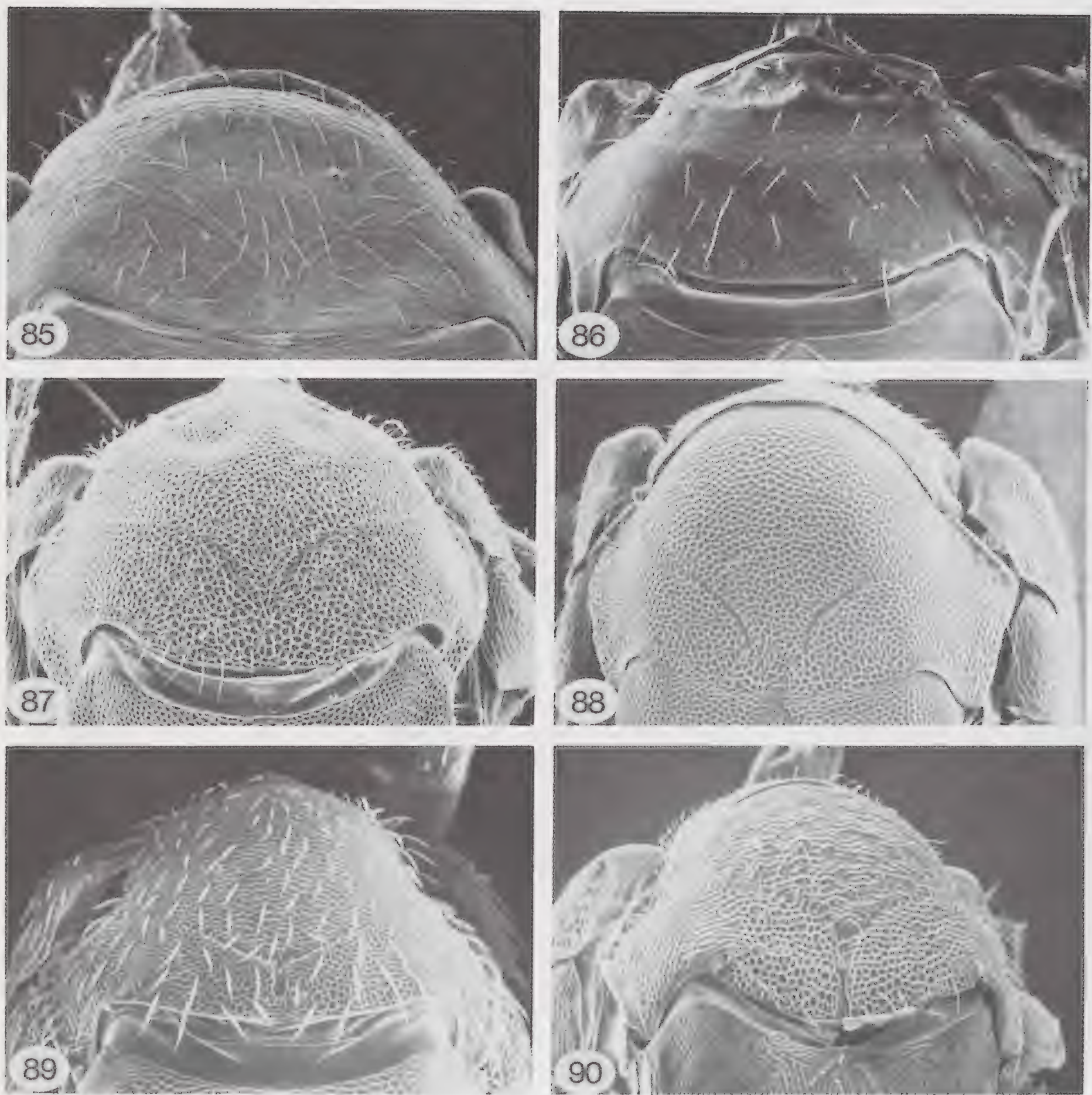
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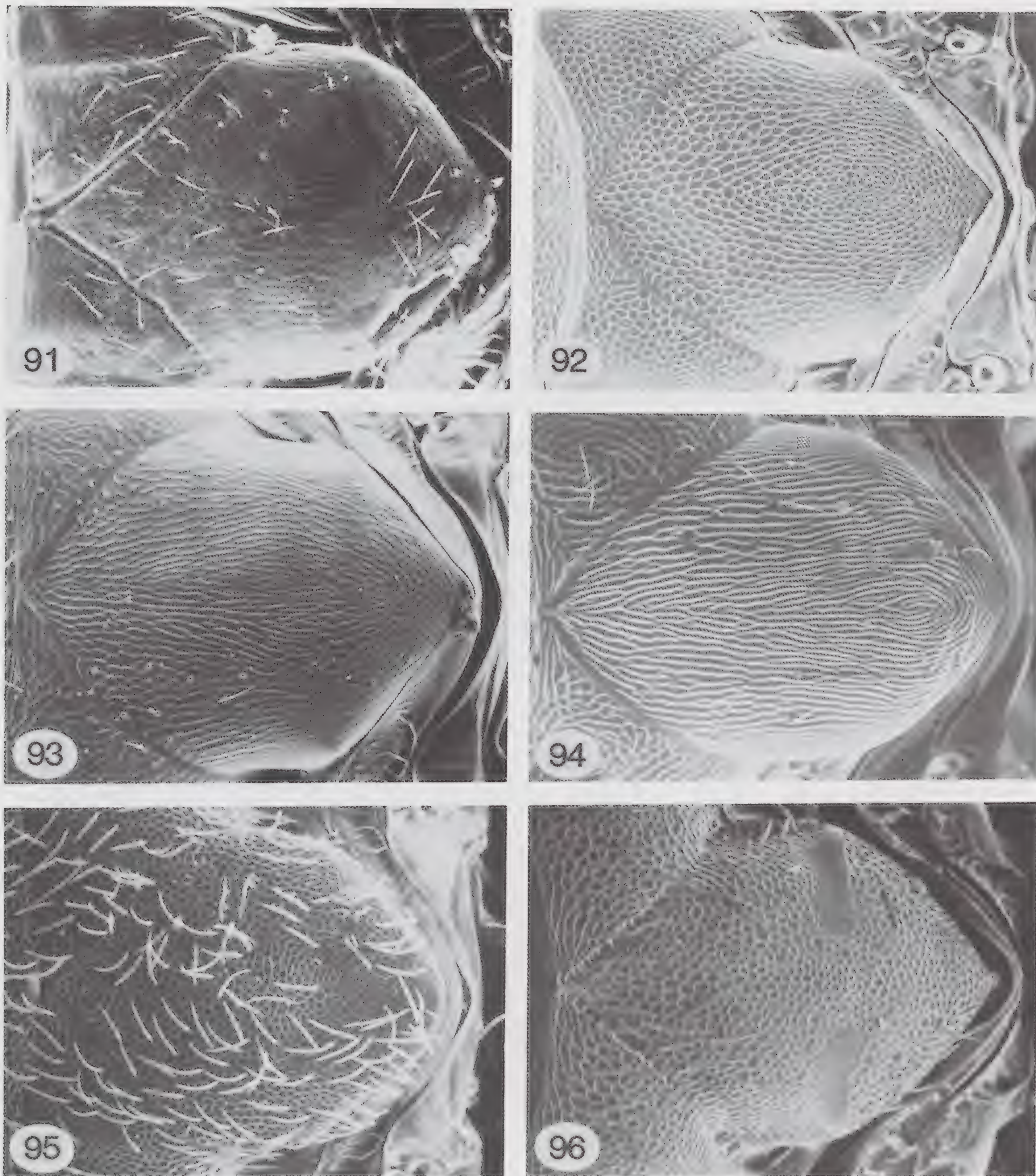
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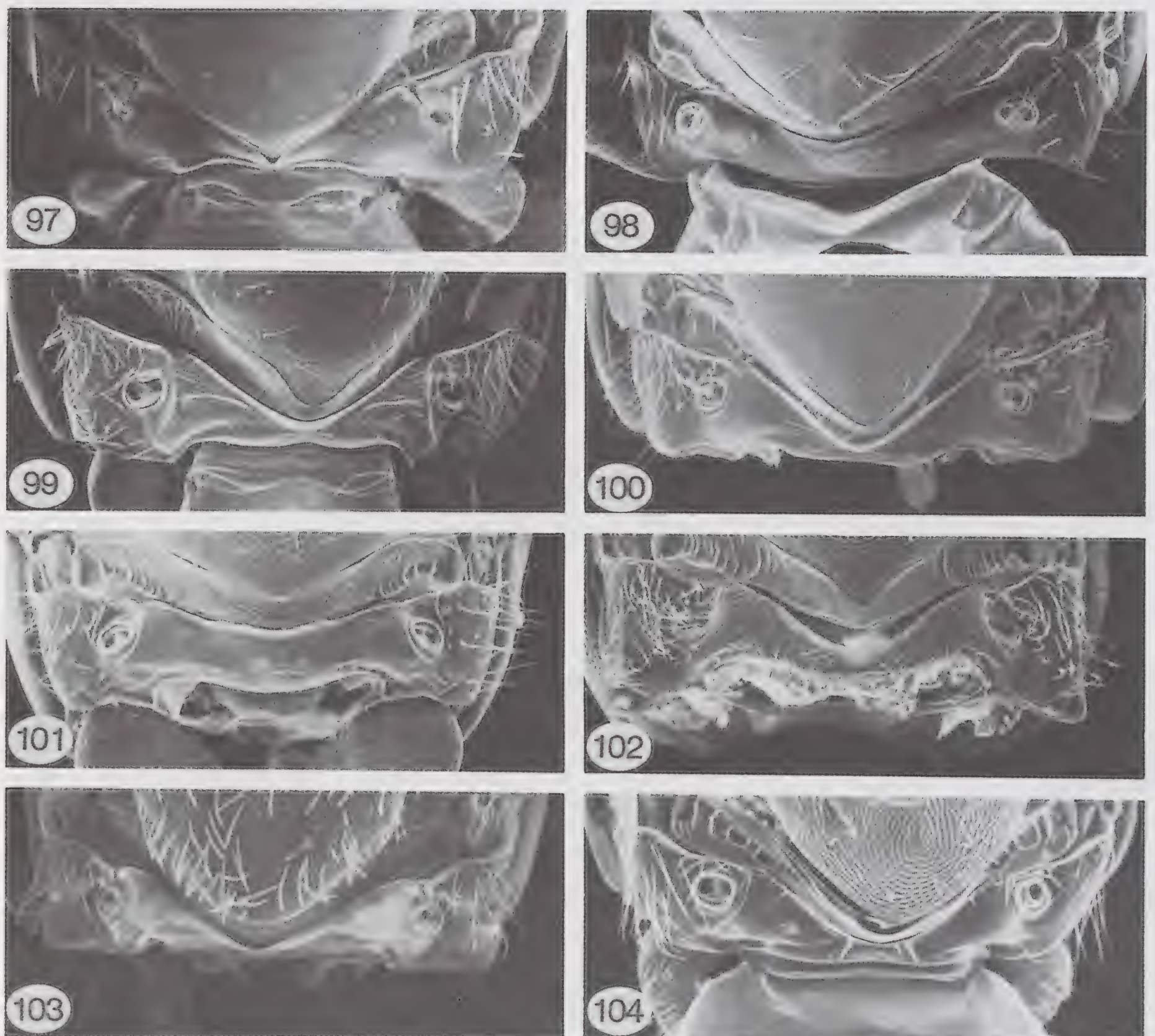
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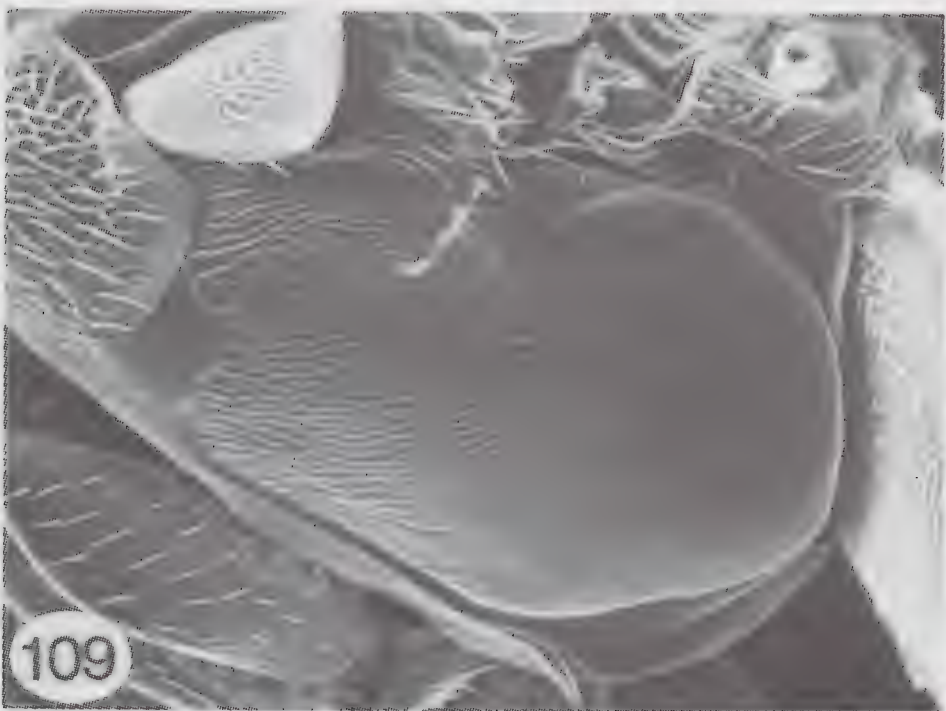
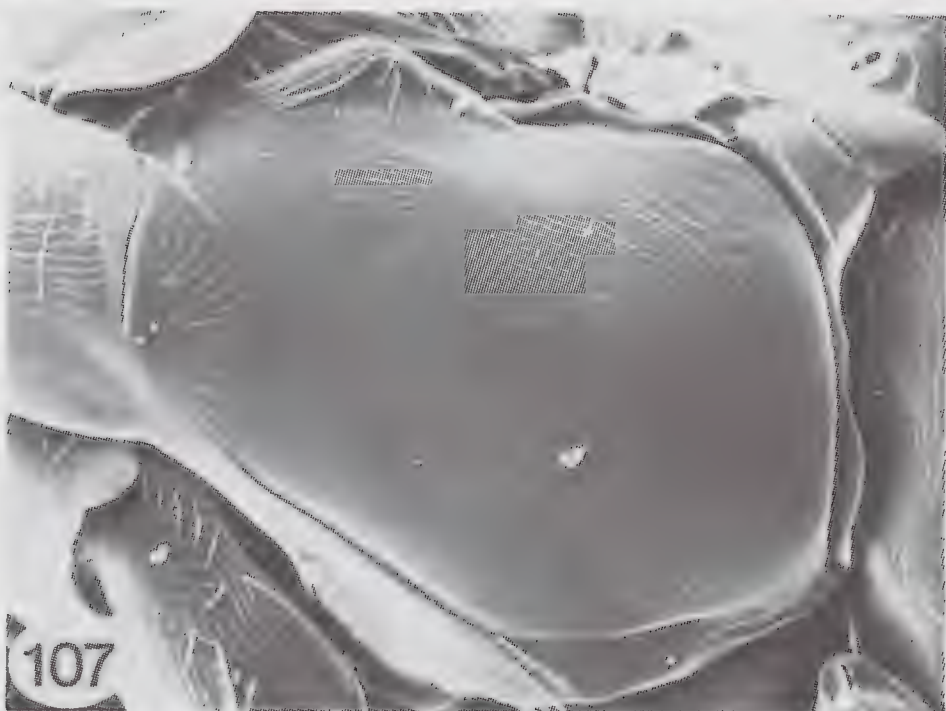
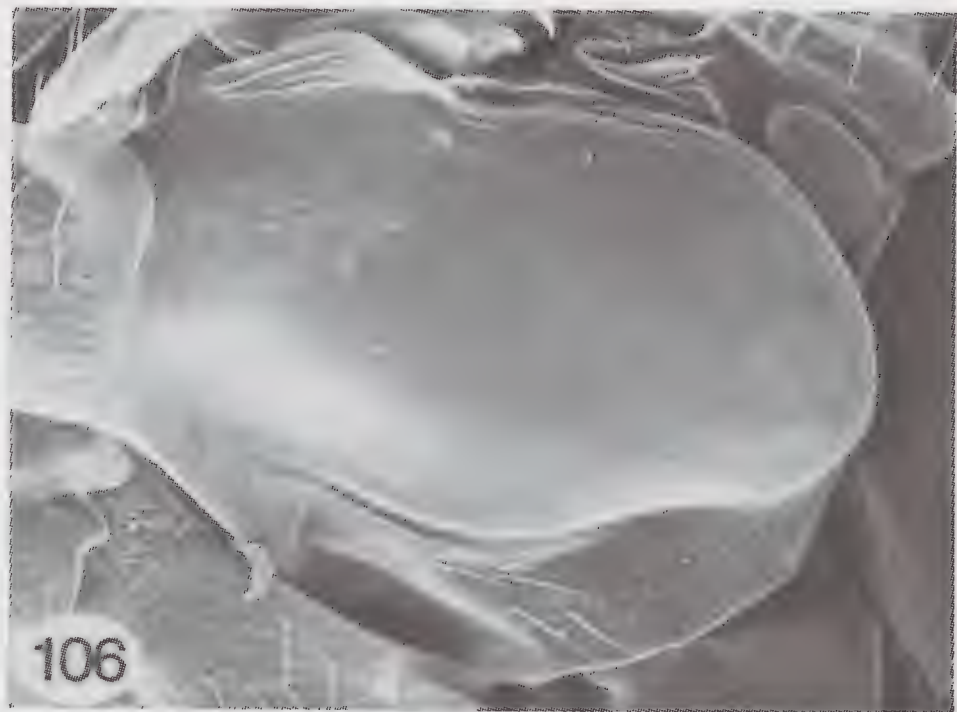
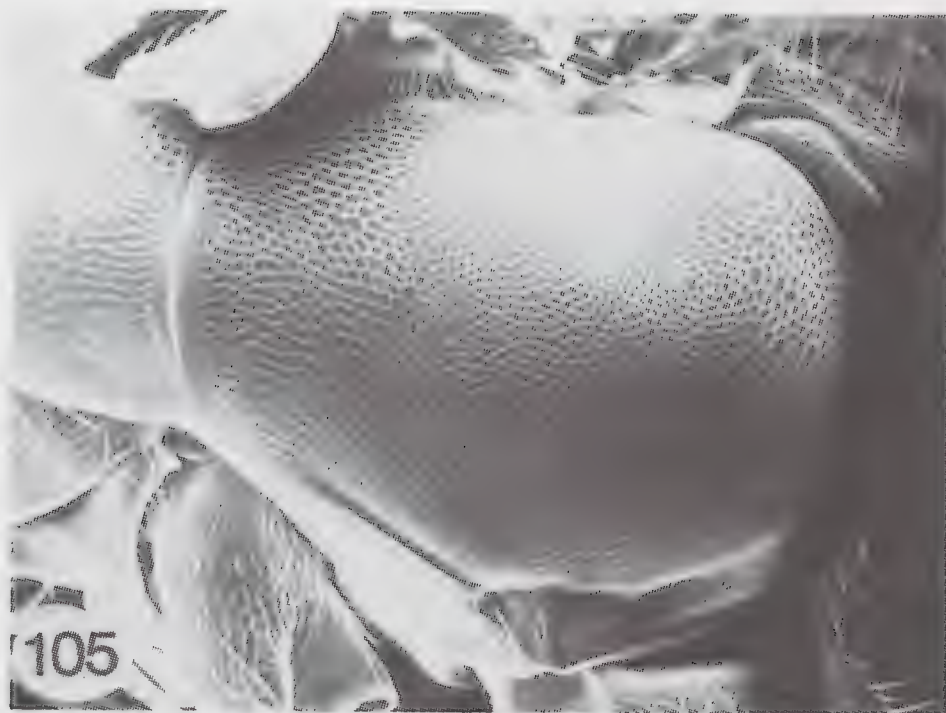
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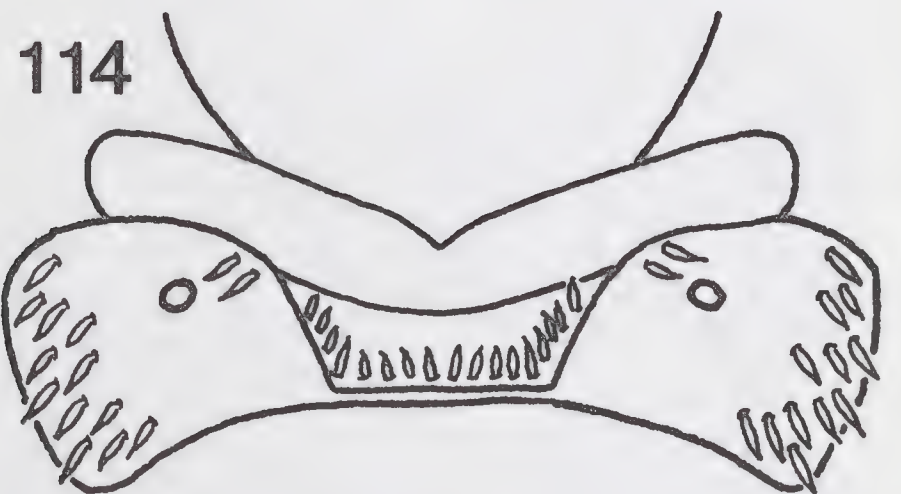
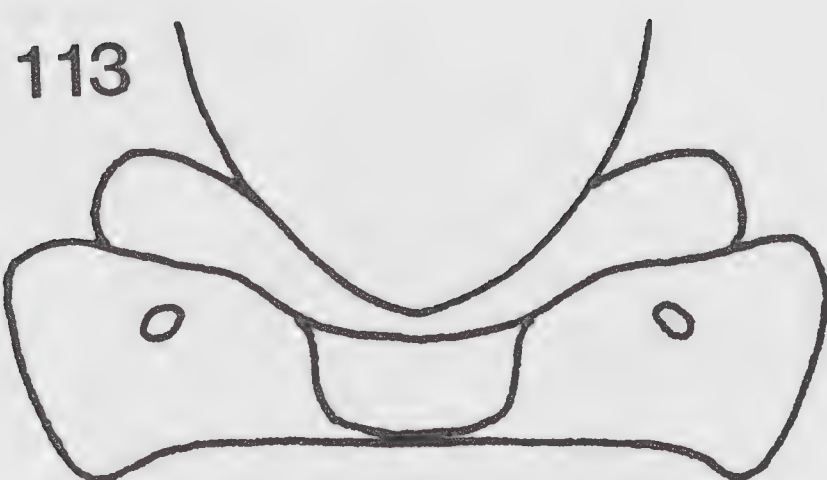
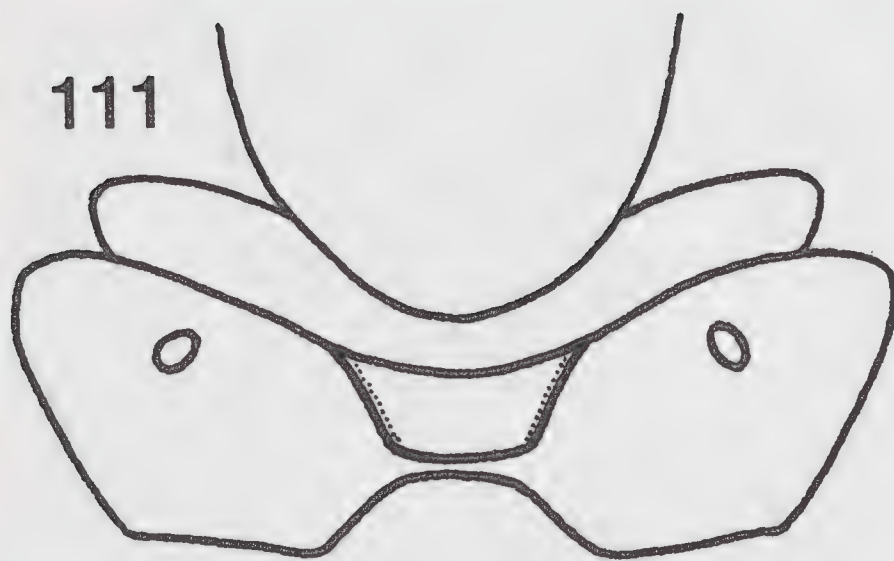
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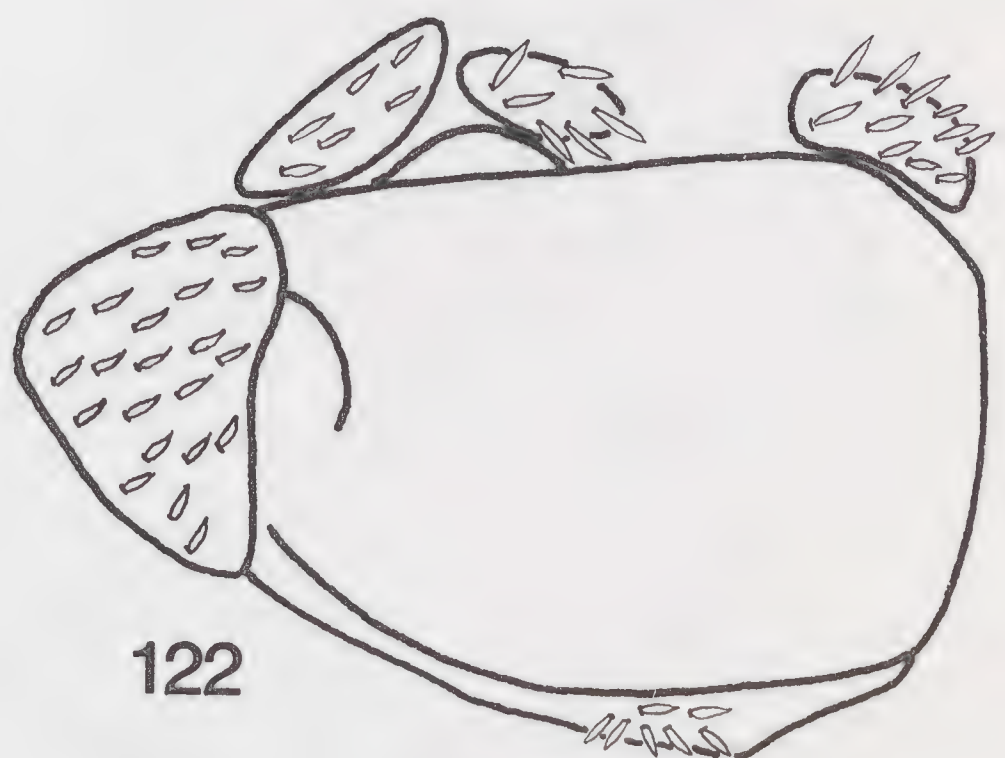
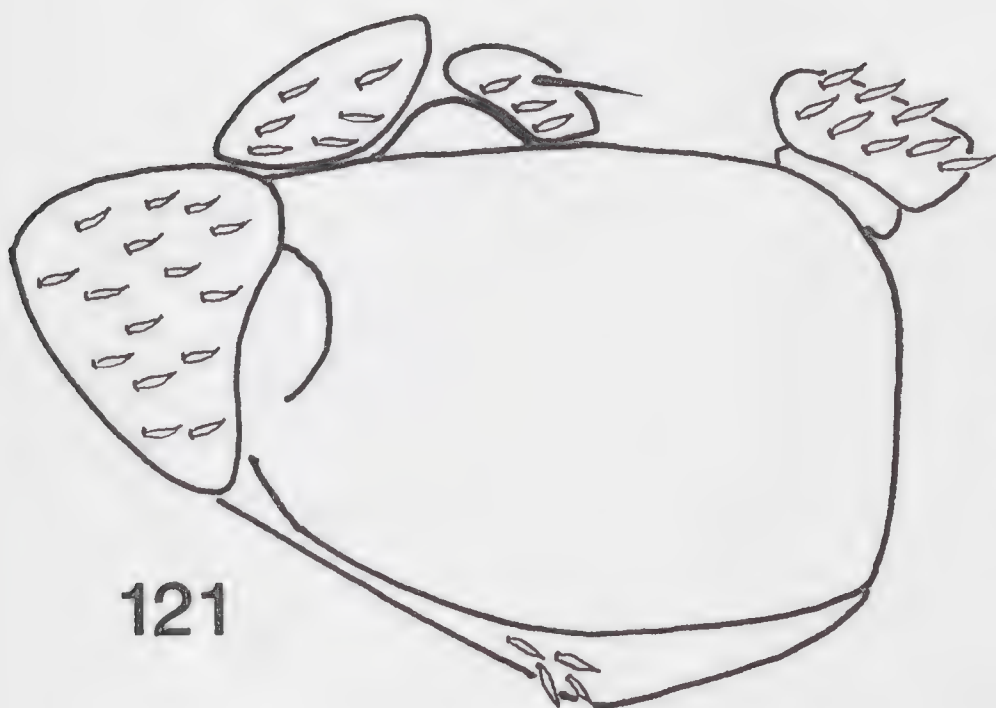
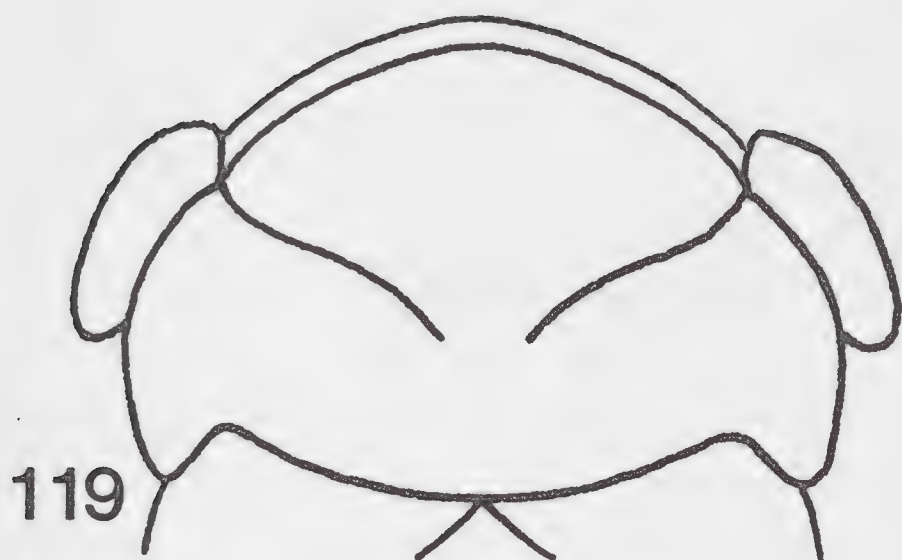
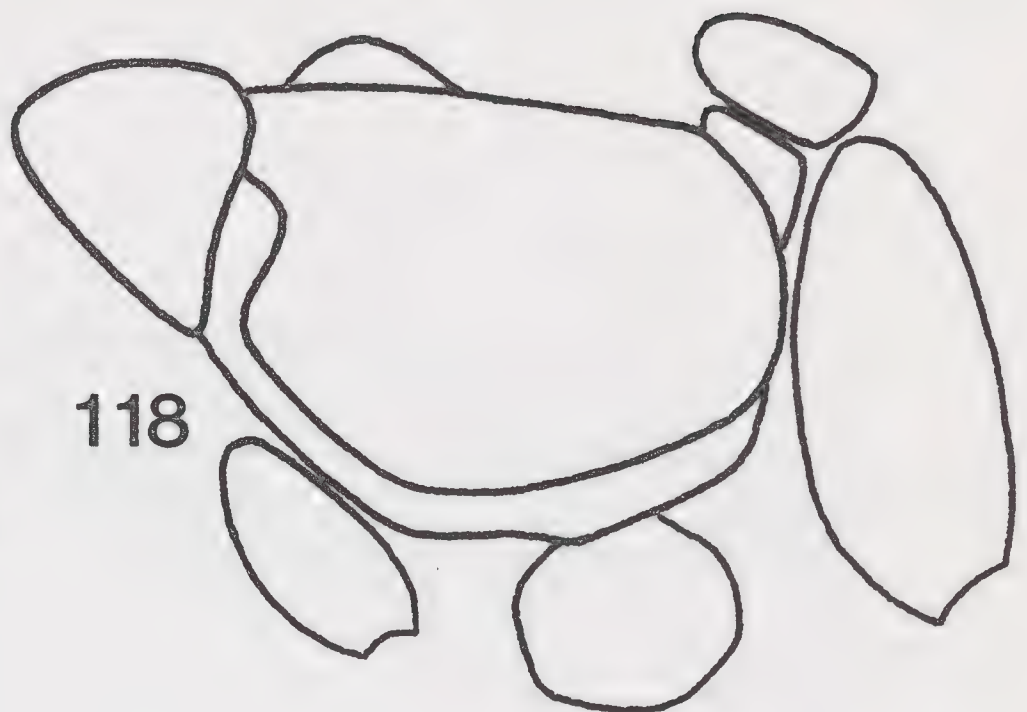
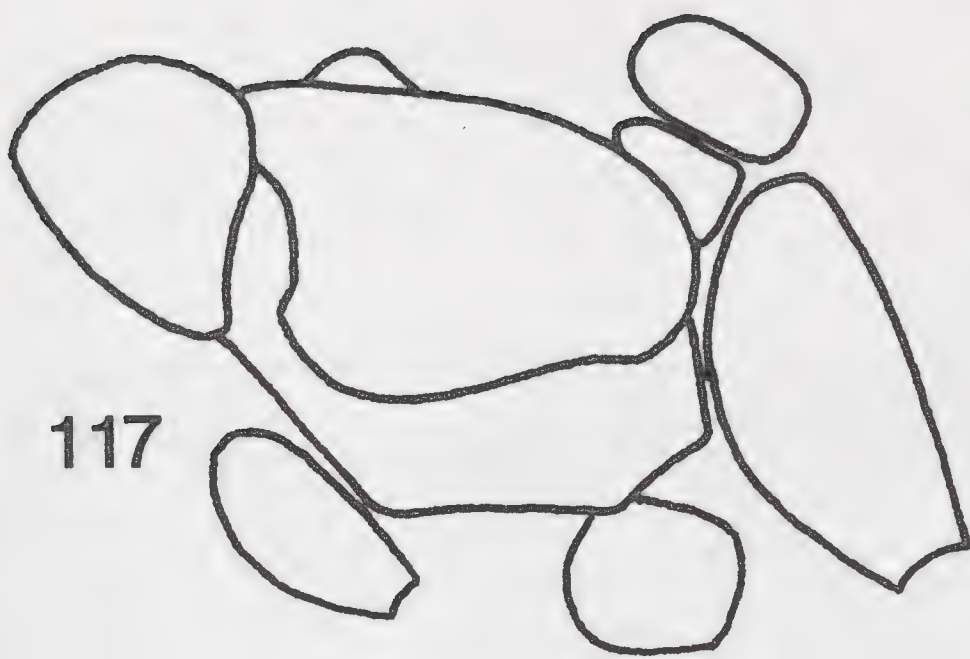
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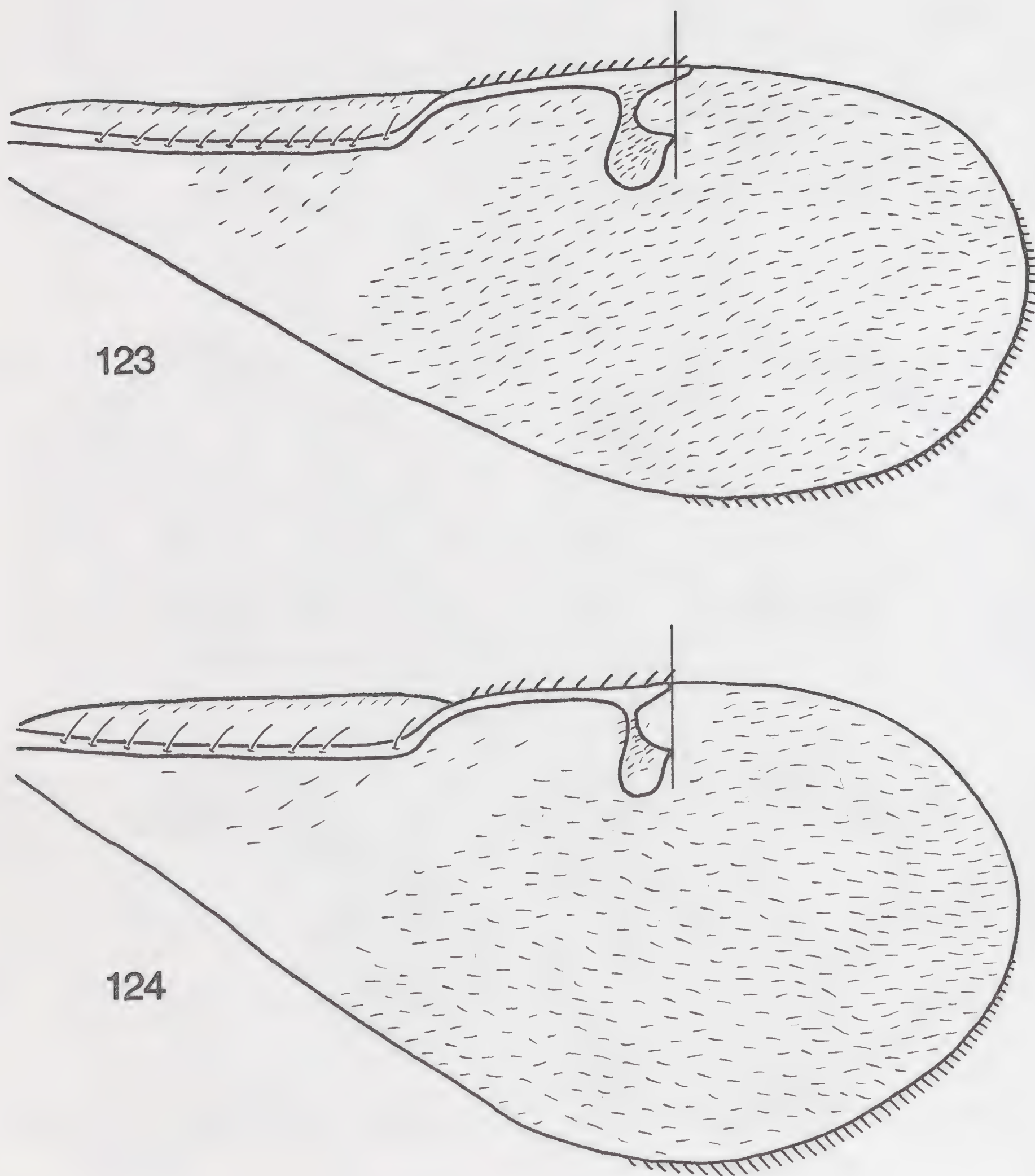
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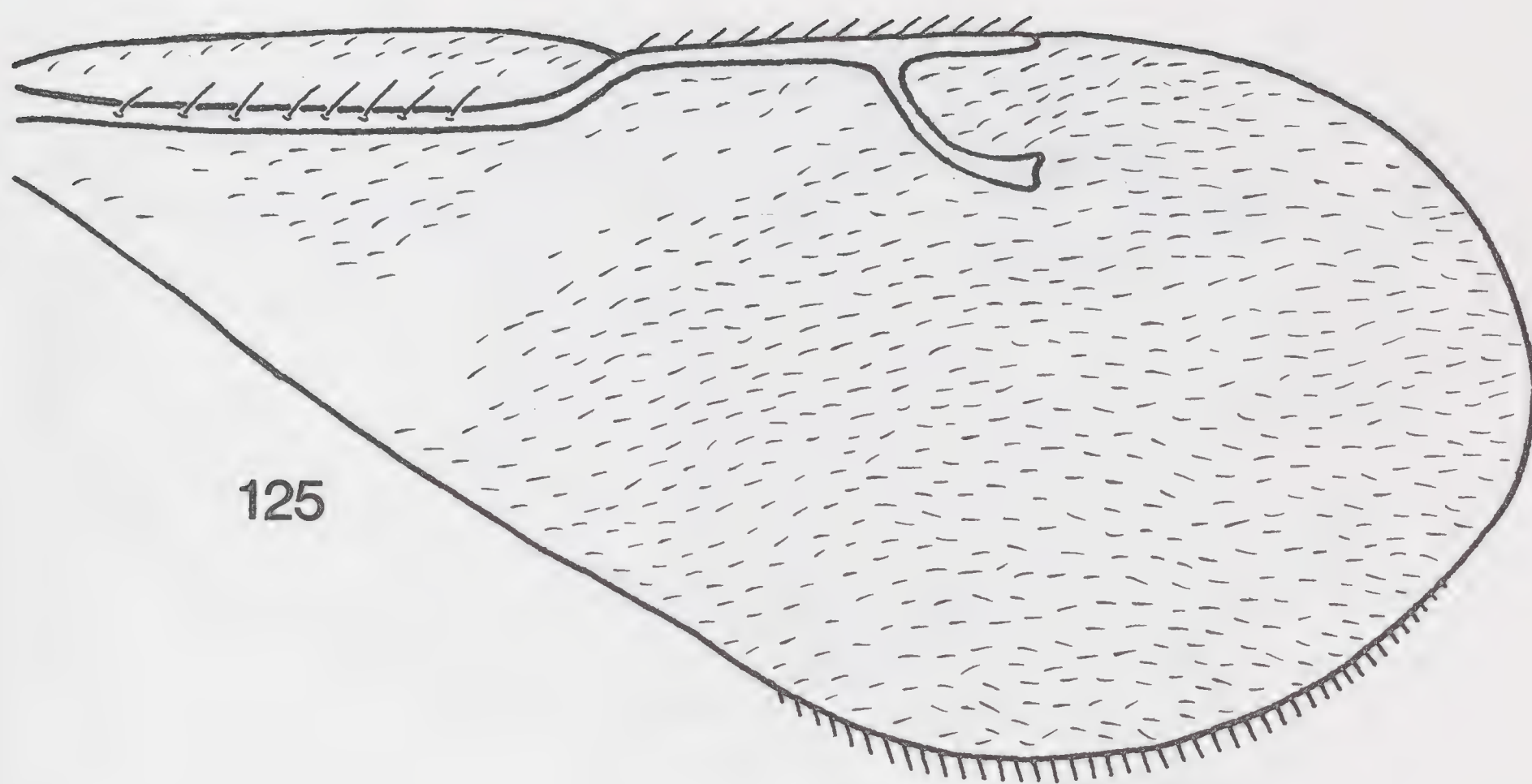
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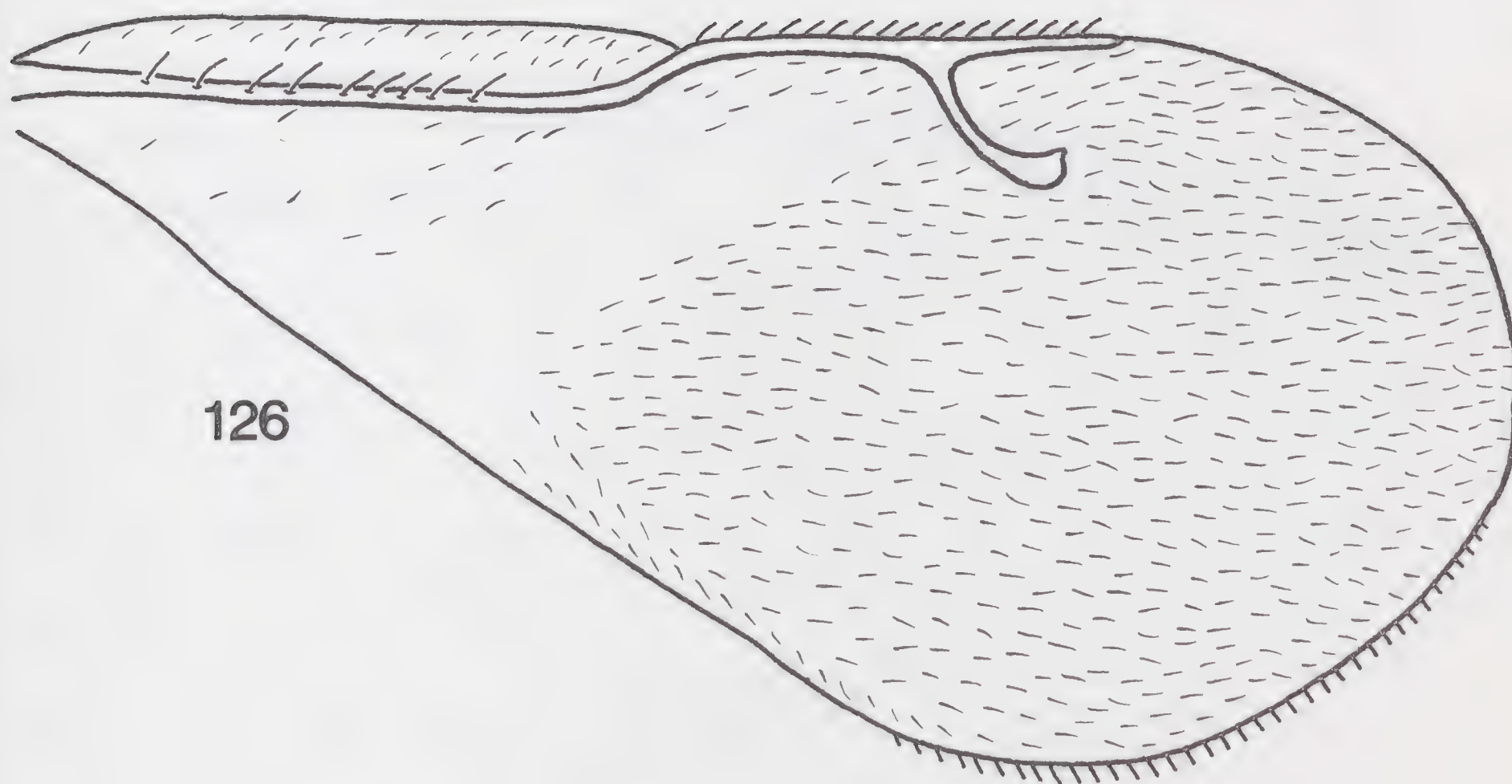
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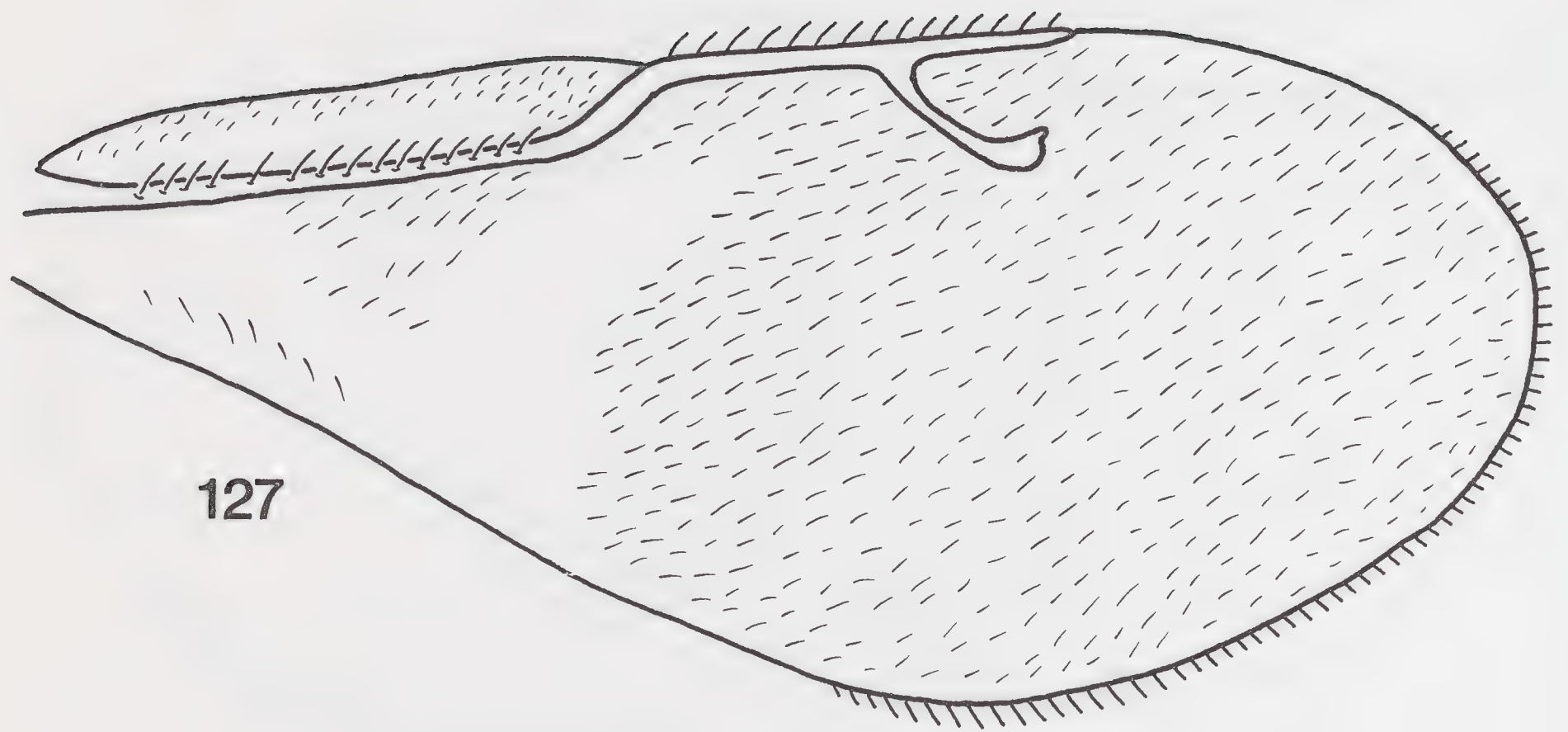


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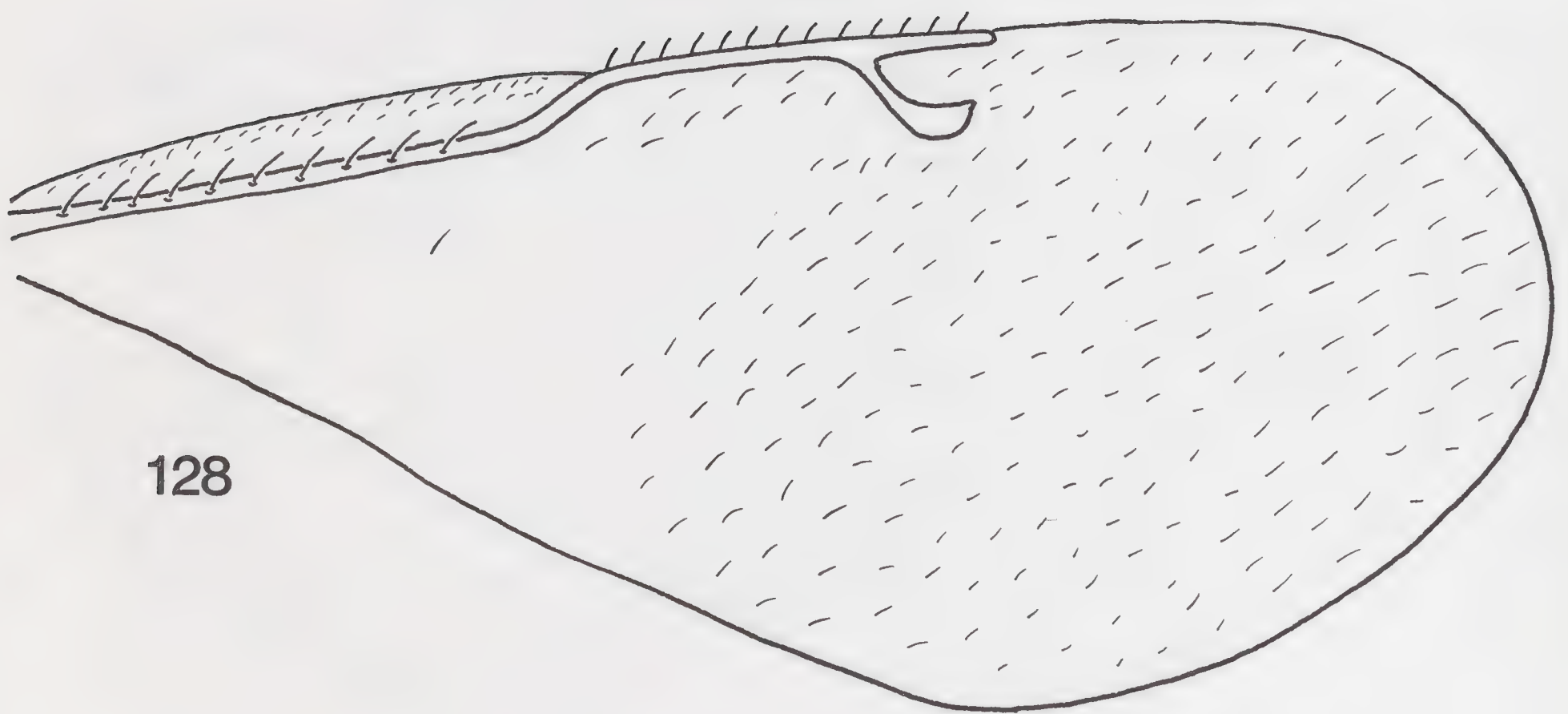


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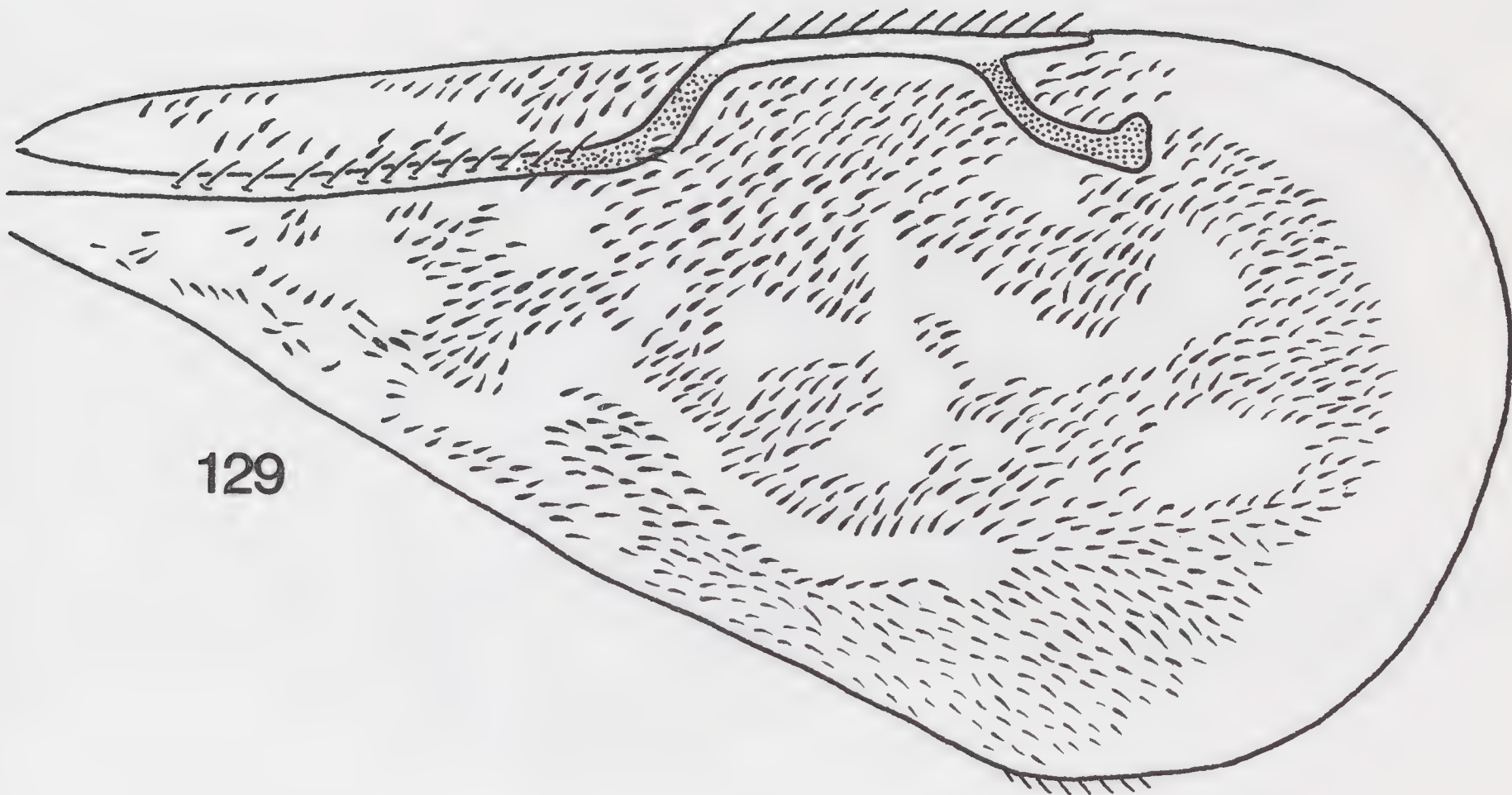


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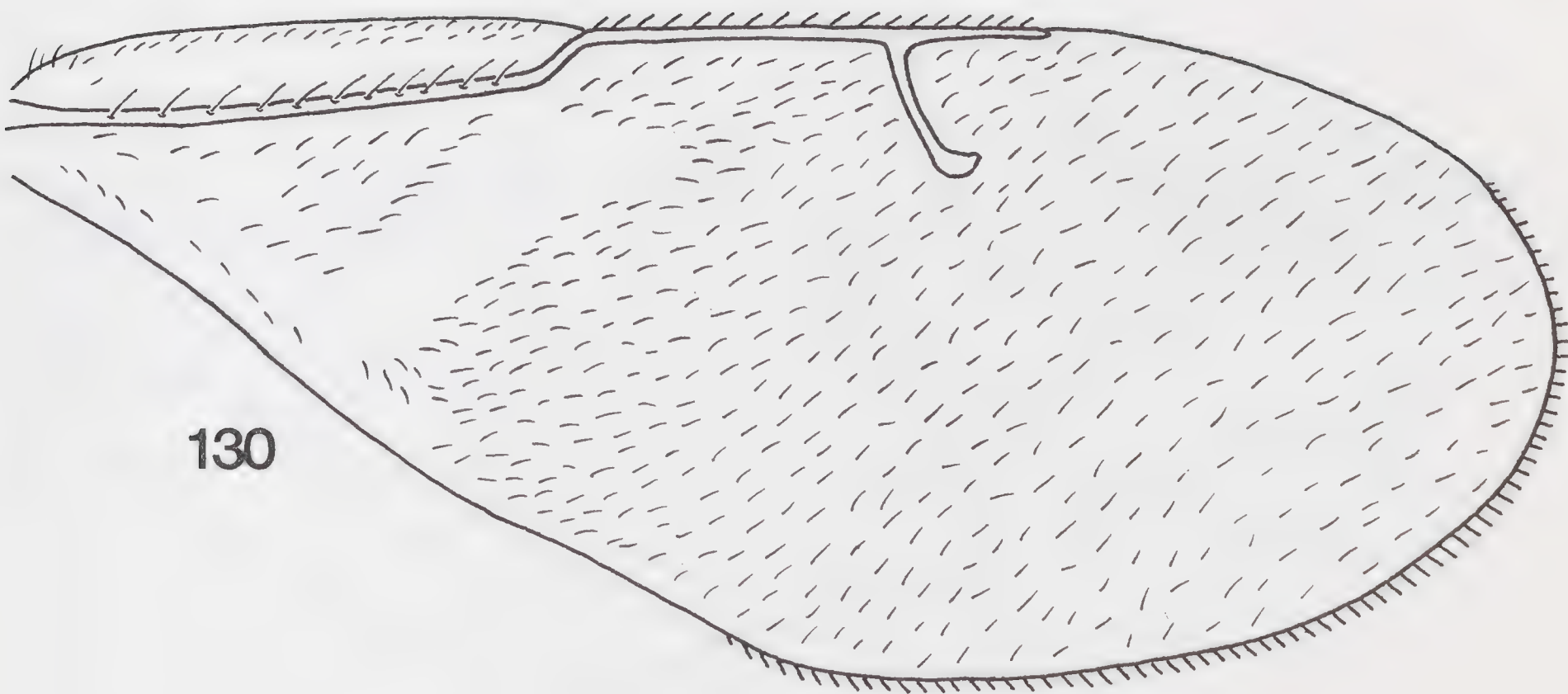


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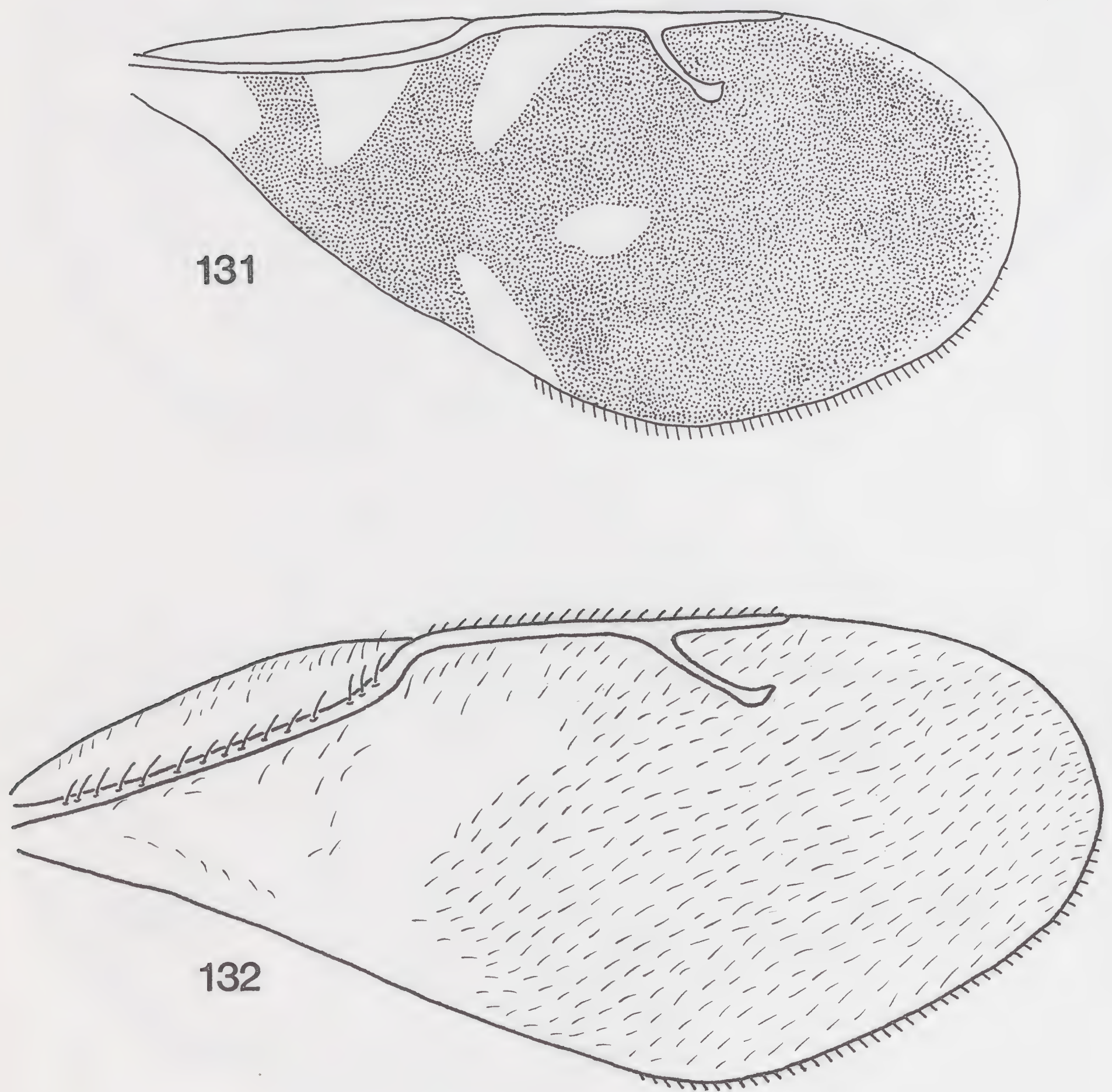


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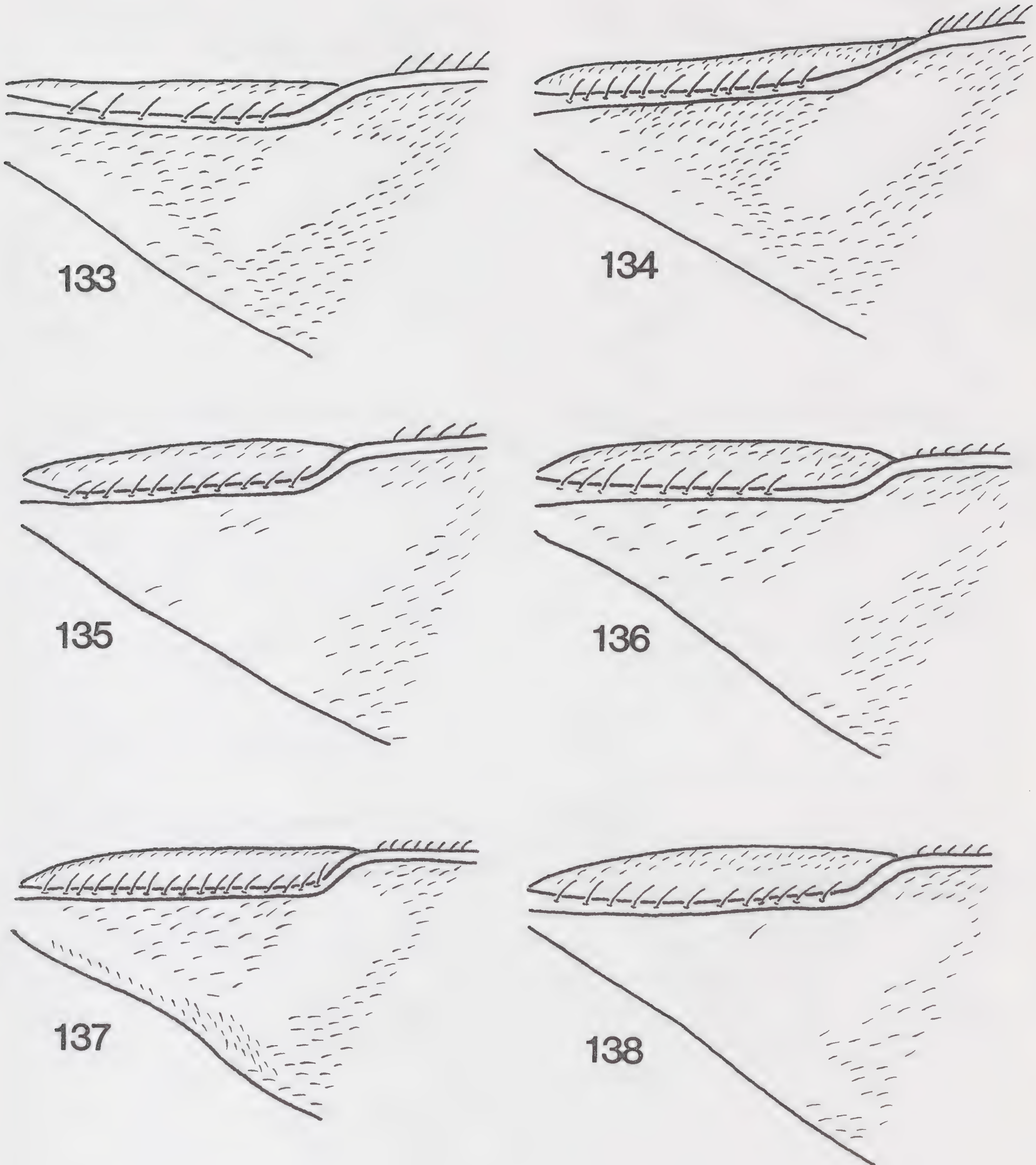


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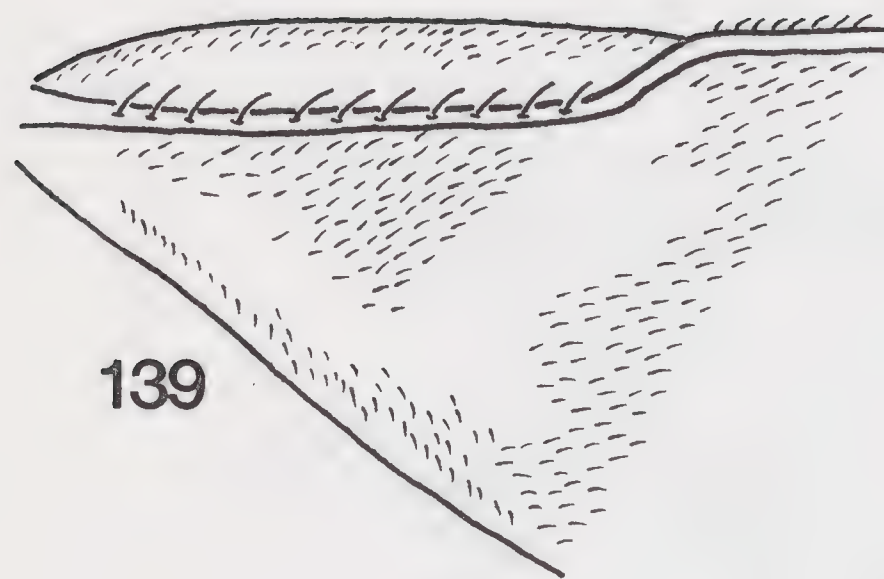
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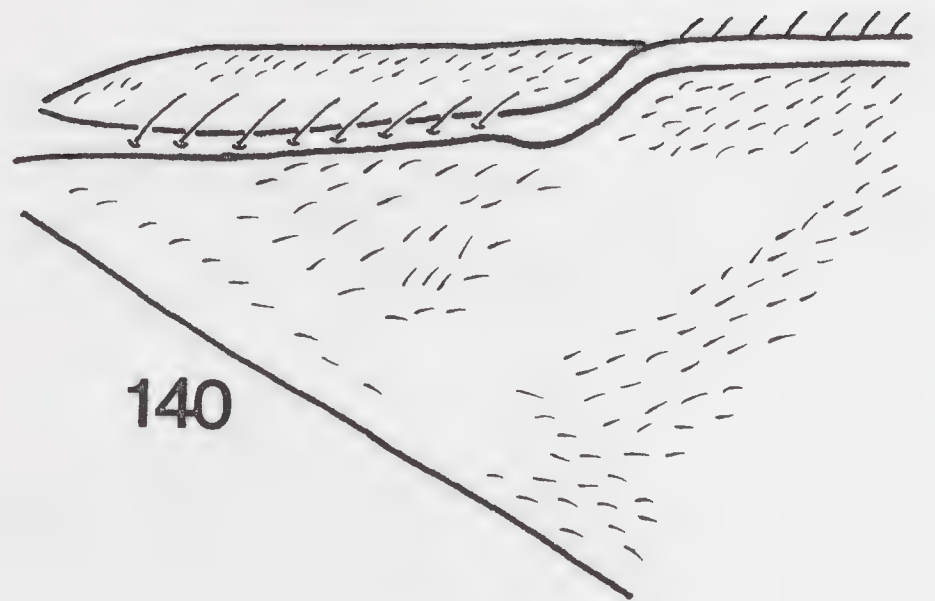
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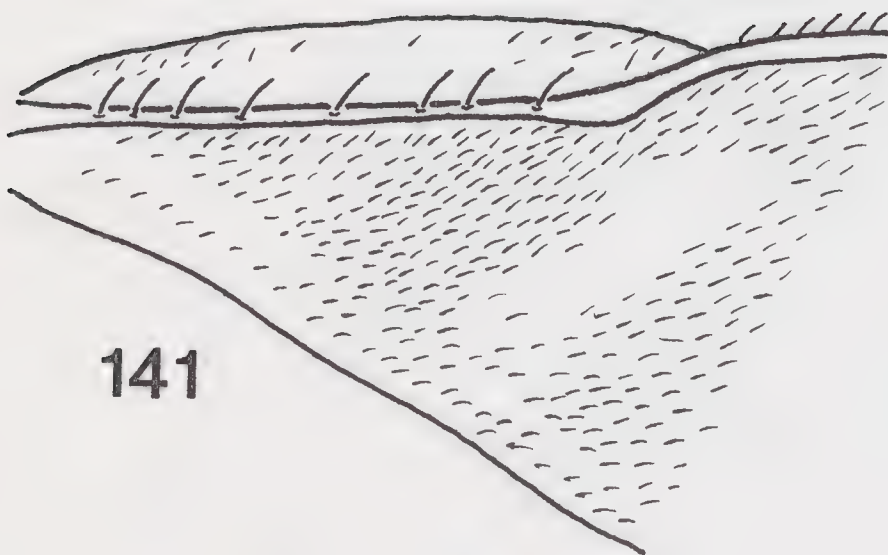
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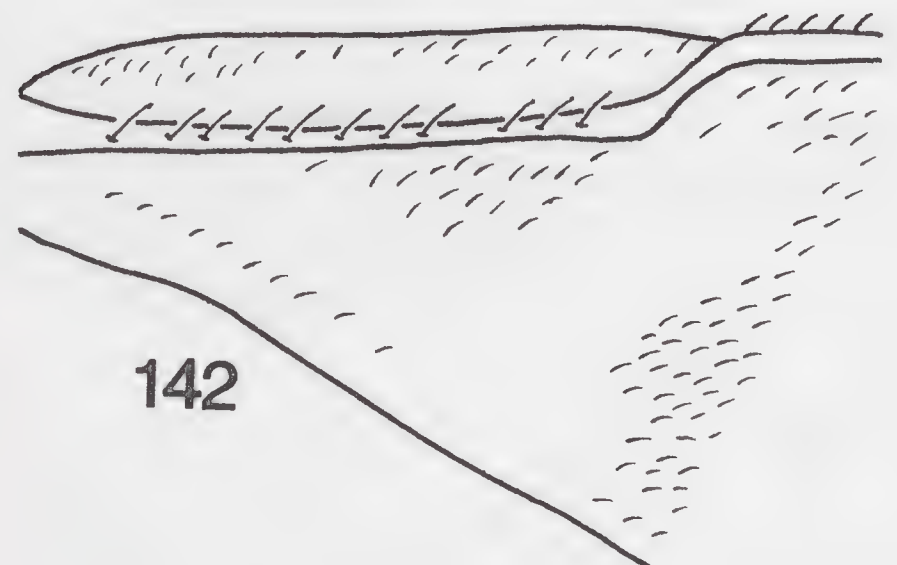
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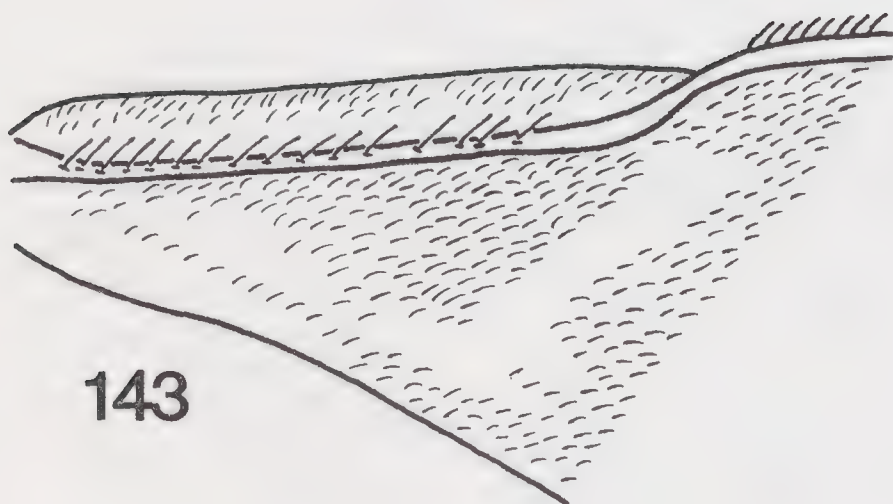
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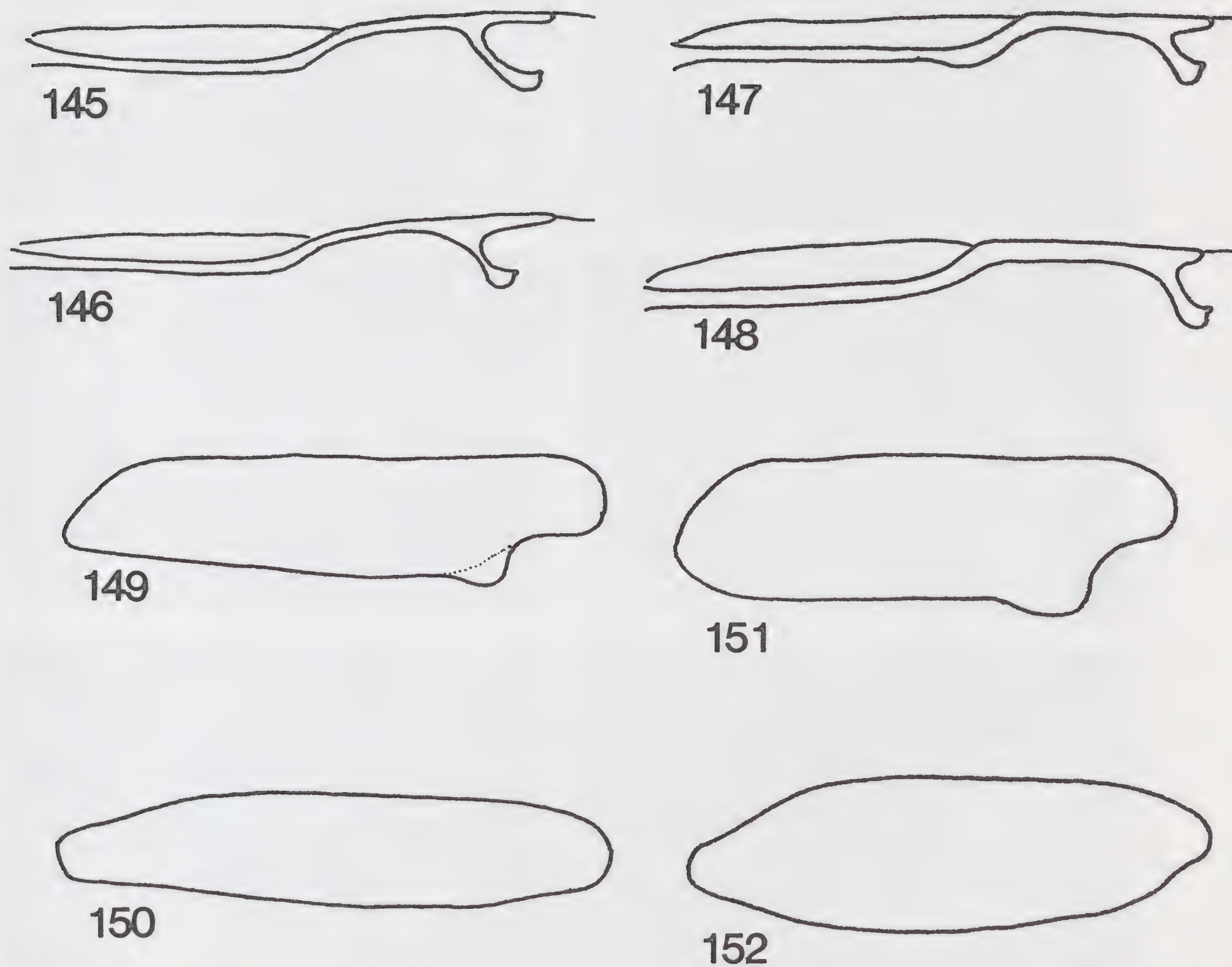


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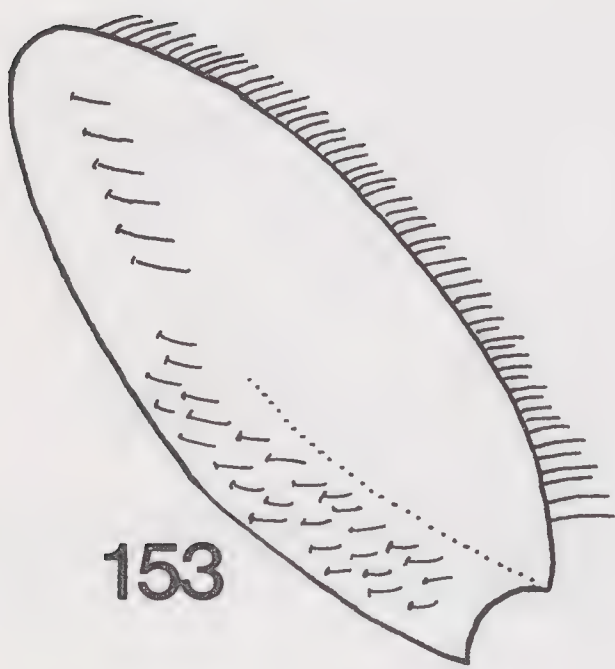


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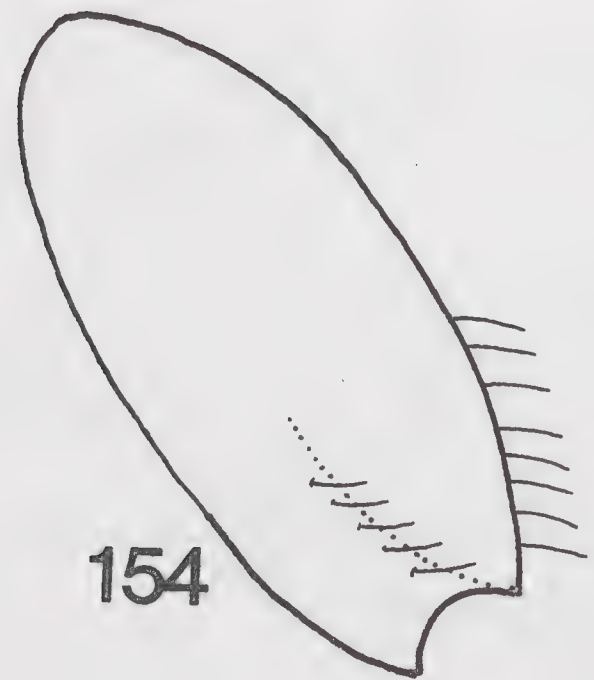
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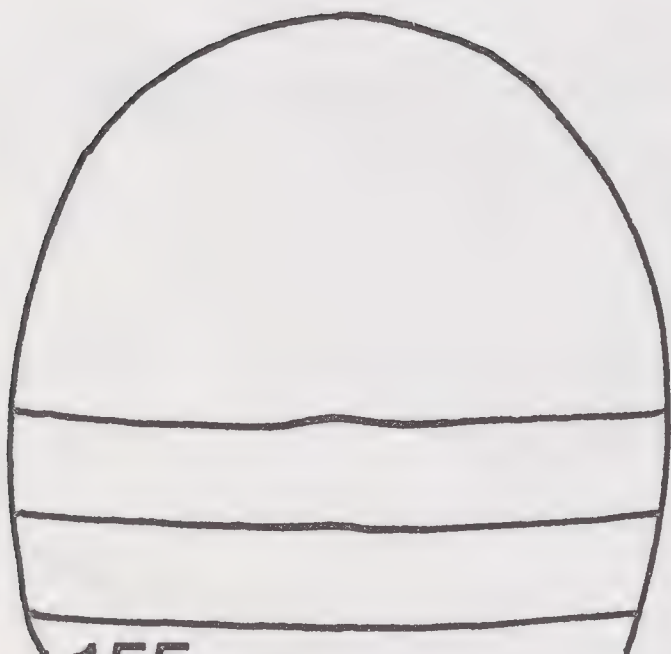
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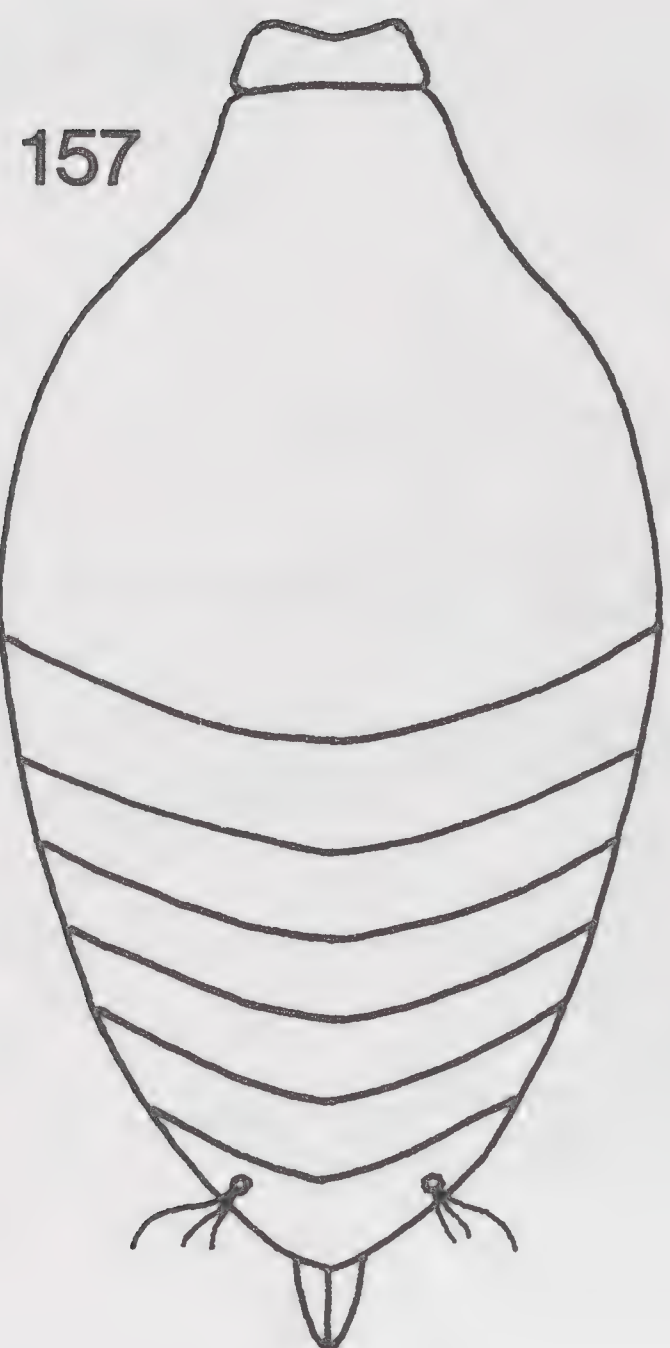
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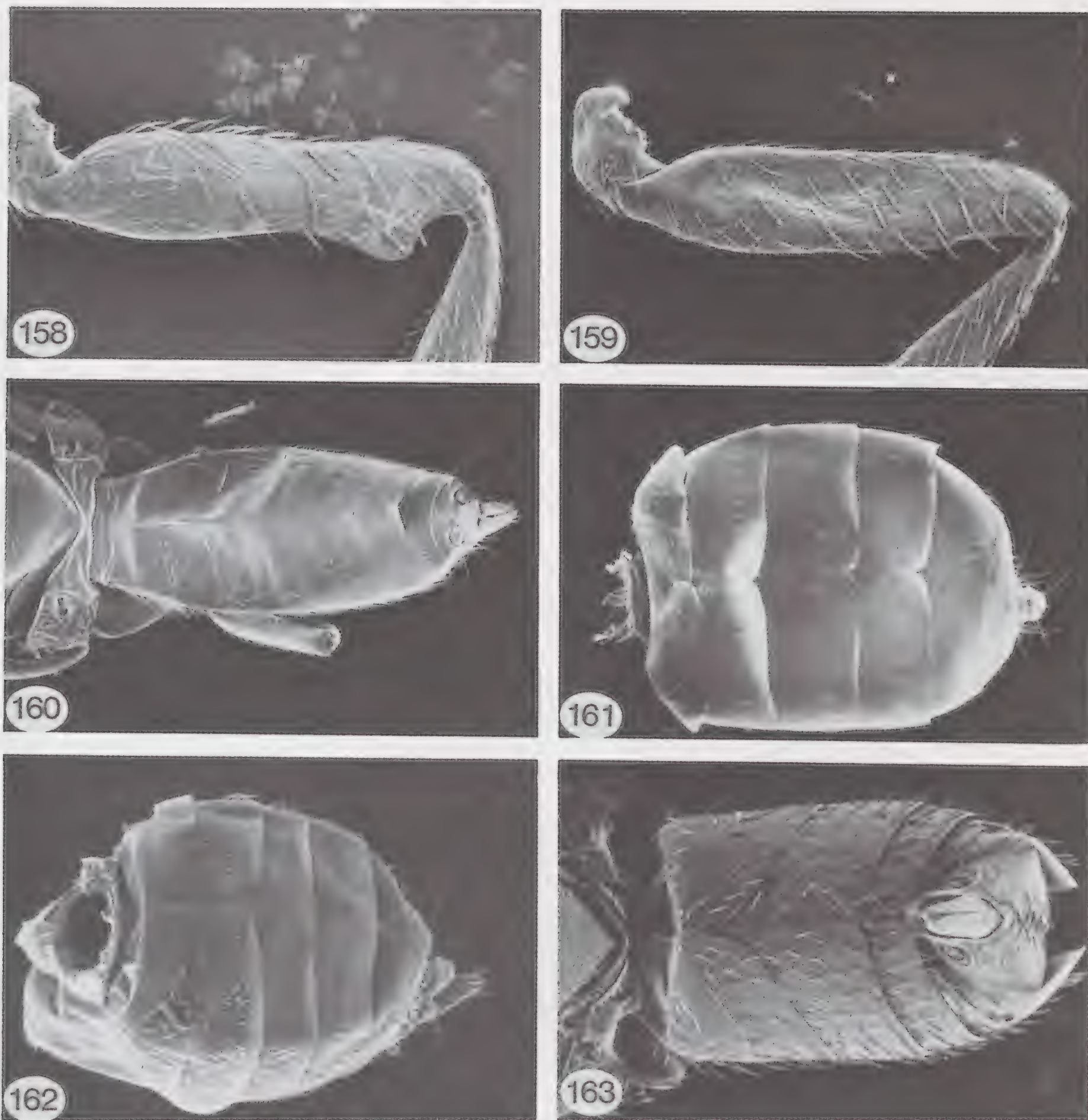


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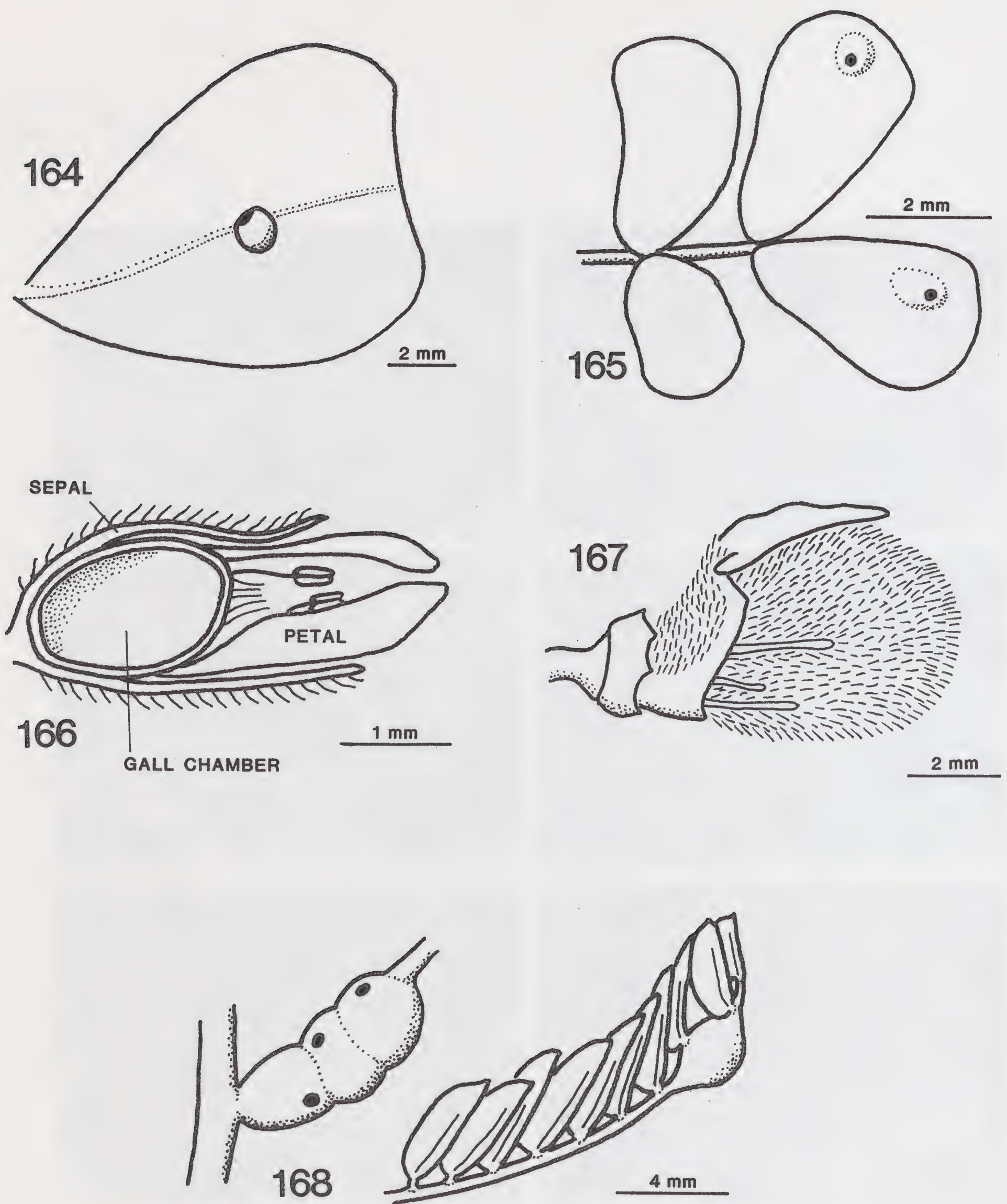


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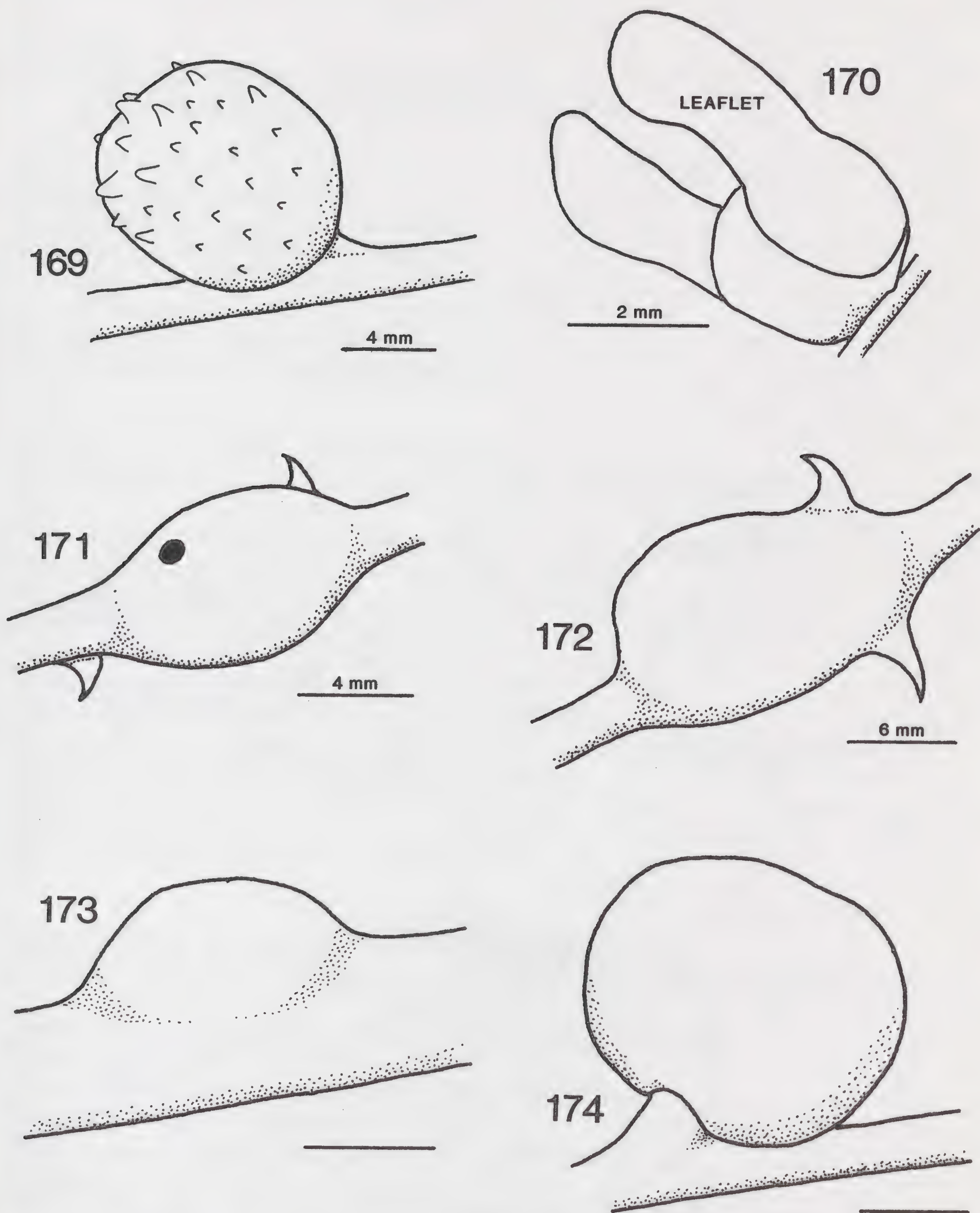
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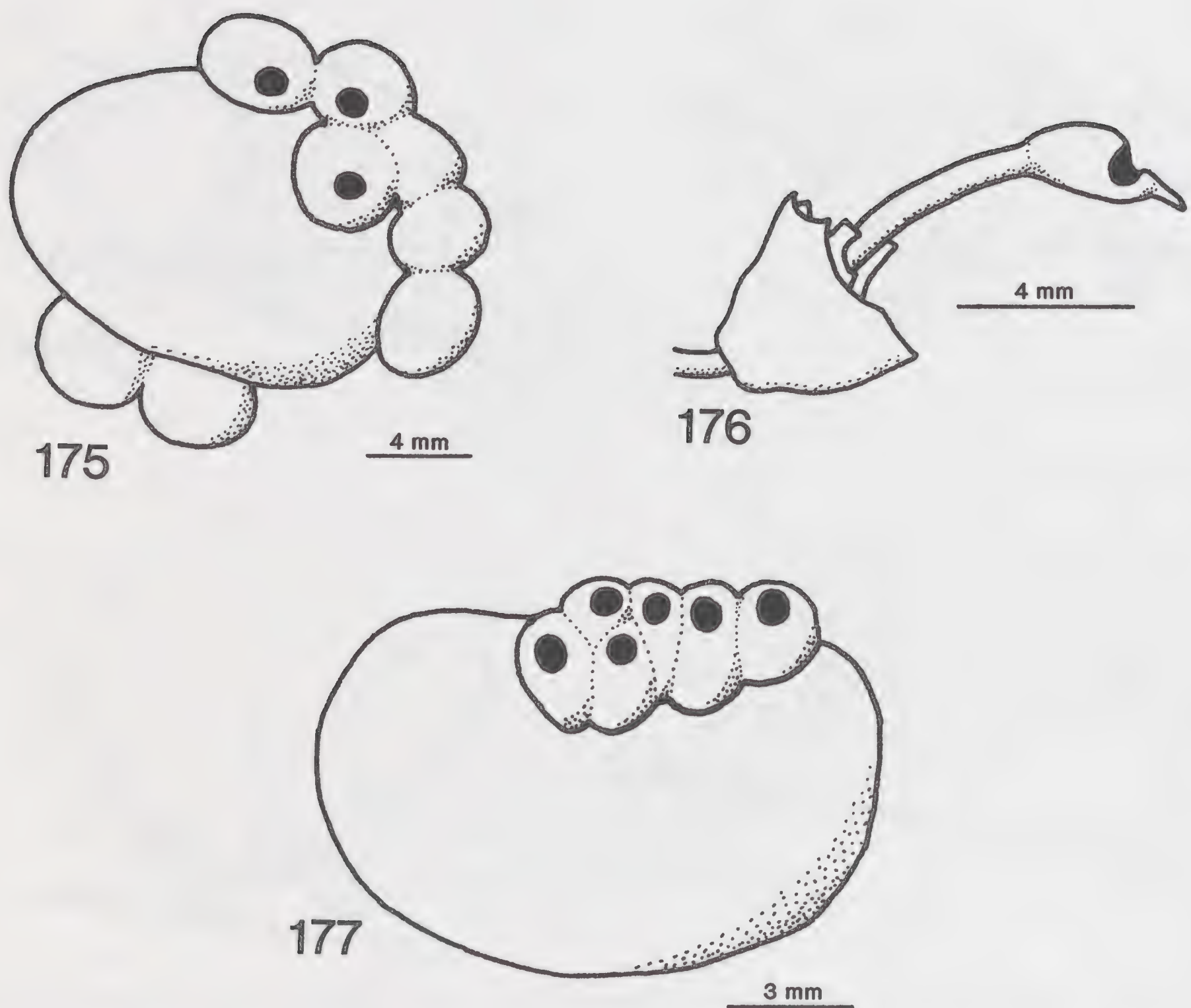
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APPENDIX 1. NEW SYNONYMIES

SPECIES

Tanaostigmodes tetartus Crawford, 1911*Tanaostigmodes americanus* Girault, 1913

GENERA

Tanaostigma Howard, 1890*Trichencyrtus* Ashmead, 1904*Tanaostigmodes* Ashmead, 1896*Monopleurothrix* Mayr, 1905*Dendrosema* Kieffer & Jörgensen, 1910*Eutetracera* Brèthes, 1924*Eutricnemus* Blanchard, 1940

APPENDIX 2. NEW COMBINATIONS

(Original genus follows present combination in parentheses).

Tanaoneura maculiventris (Minapis)*Tanaoneura portoricensis* (*Tanaostigmodes*)*Tanaostigma albosquamatum* (*Dendrosema*)*Tanaostigma chapadae* (*Trichencyrtus*)*Tanaostigma gahani* (*Trichencyrtus*)*Tanaostigma slossonae* (*Tanaostigmodes*)*Tanaostigmodes coccophagus* (*Eutricnemus*)*Tanaostigmodes coeruleus* (*Dendrosema*)*Tanaostigmodes flavicarpus* (*Tanaostigma*)*Tanaostigmodes haematoxyli* (*Tanaostigma*)*Tanaostigmodes kiefferi* (*Monopleurothrix*)*Tanaostigmodes ringueleti* (*Eutetracera*)

APPENDIX 3. LECTOTYPES DESIGNATED

(Valid generic name, if different, follows original name in parentheses).

Eutricnemus coccophagus Blanchard (*Tanaostigmodes*)*Tanaostigma coursetiae* Howard*Tanaostigma flavicarpus* Girault (*Tanaostigmodes*)*Tanaostigmodes howardii* Ashmead*Monopleurothrix kiefferi* Mayr (*Tanaostigmodes*)*Minapis nigra* Brèthes*Tanaostigmodes portoricensis* Crawford (*Tanaoneura*)*Eutetracera ringueleti* Brèthes (*Tanaostigmodes*)*Tanaostigmodes tetartus* Crawford*Tanaostigmodes slossonae* Crawford (*Tanaostigma*)

APPENDIX 4. NEW TAXA DESCRIBED

GENUS

Microprobolos type species: *Microprobolos titan* LaSalle, sp.n.

SPECIES

<i>anellarius</i> , <i>Tanaostigmodes</i>	<i>latiscapus</i> , <i>Tanaostigmodes</i>
<i>anexochus</i> , <i>Tanaostigmodes</i>	<i>lobo</i> , <i>Tanaostigma</i>
<i>aulafrons</i> , <i>Tanaostigmodes</i>	<i>madrensis</i> , <i>Tanaostigmodes</i>
<i>aurifer</i> , <i>Tanaoneura</i>	<i>matamata</i> , <i>Tanaoneura</i>
<i>basilaris</i> , <i>Tanaostigmodes</i>	<i>meltoni</i> , <i>Tanaostigmodes</i>
<i>bennetti</i> , <i>Tanaostigma</i>	<i>mexicanus</i> , <i>Tanaostigmodes</i>
<i>brevisulcus</i> , <i>Tanaostigmodes</i>	<i>minutus</i> , <i>Tanaostigmodes</i>
<i>carinatus</i> , <i>Tanaostigmodes</i>	<i>mosesi</i> , <i>Tanaostigmodes</i>
<i>darwinii</i> , <i>Tanaoneura</i>	<i>peruviensis</i> , <i>Tanaostigmodes</i>
<i>desantisi</i> , <i>Tanaostigmodes</i>	<i>pithecellobiae</i> , <i>Tanaostigmodes</i>
<i>dilatus</i> , <i>Tanaostigmodes</i>	<i>plaumanni</i> , <i>Tanaostigma</i>
<i>dominicensis</i> , <i>Tanaostigmodes</i>	<i>punctus</i> , <i>Tanaostigmodes</i>
<i>emarginatus</i> , <i>Tanaostigmodes</i>	<i>smicropleura</i> , <i>Tanaoneura</i>
<i>fernandesi</i> , <i>Tanaostigmodes</i>	<i>sonorensis</i> , <i>Tanaostigmodes</i>
<i>fisheri</i> , <i>Tanaostigmodes</i>	<i>stanleyi</i> , <i>Tanaostigma</i>
<i>flavilineata</i> , <i>Tanaoneura</i>	<i>sulcatus</i> , <i>Tanaostigmodes</i>
<i>glabrum</i> , <i>Tanaostigma</i>	<i>tenuisulcus</i> , <i>Tanaostigmodes</i>
<i>gracilis</i> , <i>Tanaostigmodes</i>	<i>tescus</i> , <i>Tanaostigmodes</i>
<i>hirticoxa</i> , <i>Tanaoneura</i>	<i>titan</i> , <i>Microprobolos</i>
<i>impilum</i> , <i>Tanaostigma</i>	<i>tricolor</i> , <i>Tanaostigmodes</i>
<i>incompleta</i> , <i>Tanaoneura</i>	<i>triplaris</i> , <i>Tanaostigmodes</i>
<i>inexacta</i> , <i>Tanaoneura</i>	<i>viridis</i> , <i>Tanaostigmodes</i>
<i>insculptus</i> , <i>Tanaostigmodes</i>	<i>xanthogaster</i> , <i>Tanaostigmodes</i>
<i>koebelei</i> , <i>Tanaostigmodes</i>	<i>yuohuae</i> , <i>Tanaostigmodes</i>
<i>larsoni</i> , <i>Tanaostigmodes</i>	

APPENDIX 5. GENERA DESCRIBED AS TANAOSTIGMATIDAE WHICH BELONG IN OTHER FAMILIES.

(References do not necessarily refer to original placement in other families).

Ataneostigma Girault, 1915:42-43.

Type species *Ataneostigma pulchra* Girault, 1915 (original designation).
APHELINIDAE (Hayat, 1983 = *Coccophagus*)

Eupelmomorpha Girault, 1915:43.

Type species *Eupelmomorpha quadricolor* Girault, 1915 (original designation).

ENCYRTIDAE (Noyes & Hayat, 1984 = *Charitopus*)

***Eutrichosomella* Girault, 1915:40-41.**

Type species *Eutrichosomella albiclava* Girault, 1915 (original designation).

APHELINIDAE (Hayat, 1983)

***Rafa* Brèthes, 1916:421.**

Type species *Rafa albitarsis* Brèthes, 1916 (original designation).

EUPELMIDAE (De Santis, 1980 =*Eupelmus*)

***Taneostigmoidella* Girault, 1915:39.**

Type species *Taneostigmoidella nympa* Girault, 1915 (original designation).

APHELINIDAE (Hayat, 1983 =*Prococcophagus*)

***Taneostigmomyia* Girault, 1915:39.**

Type species *Taneostigmomyia spenceri* Girault, 1915 (original designation).

EULOPHIDAE (I have found no previous placement of this genus in the Eulophidae)

APPENDIX 6. CHECKLIST OF OLD WORLD TANAOSTIGMATIDAE**GENERA (not found in New World)*****Cynipencyrtus* Ishii, 1928:106-107**

(type species *Cynipencyrtus flavus*, original designation)

***Miscogasteromorpha* Girault, 1915:42**

(type species *Miscogasteromorpha ajax*, original designation)

***Protanaostigma* Ferrière, 1929:156**

(type species *Protanaostigma milletae*, monotypy)

***Saavedra* Girault, 1933:5**

(type species *Saavedra velasquezi*, monotypy)

SPECIES***Cynipencyrtus flavus* Ishii, 1928:107-108 (Japan)**

(Synonym: *Cynipencyrtus bicolor* Ishii, 1928:108-109)

Miscogasteromorpha ajax* Girault, 1915:42 (Australia)**Miscogasteromorpha eja* Girault, 1921:191 (Australia)*****Miscogasteromorpha eupelmiformis* Girault, 1915:42 (Australia)*****Protanaostigma milletae* Ferrière, 1929:156-159 (Java)*****Protanaostigma derricola* Ferrière, 1932:1-4 (Sumatra)*****Protanaostigma kyushuana* Masi, 1940:30-32 (Japan)*****Saavedra velasquezi* Girault, 1933:5 (Australia)*****Tanaostigmodes bifasciatifrons* Girault, 1915:44 (Australia)*****Tanaostigmodes cajaninae* LaSalle, 1985:305-307 (in Lateef, et. al., 1985)
(India)*****Tanaostigmodes globosus* Girault, 1915:44 (Australia)**

Tanaostigmodes globosus novus Girault, 1915:44 (Australia)

Tanaostigmodes silviae Girault, 1922:106 (Australia)

Tanaostigmodes unifascia Girault, 1927:311 (Australia)

APPENDIX 7. HOST ASSOCIATIONS OF NEW WORLD TANAOSTIGMATIDAE.

Tanaostigmatid(s) follow host plants in parentheses.

Obviously erroneous records have been omitted.

[?] indicates a questionable record.

FABACEAE:Caesalpinoidea

Caesalpinia pyramidalis (*Tanaostigmodes desantisi*)

Haematoxylon brasiletto (*Tanaostigma haematoxyli*)

Haematoxylon campechianum (*Tanaostigma haematoxyli*)

FABACEAE:Faboidea

Aeschynomene petraea var. *madrensis* (*Tanaostigma lobo*,
Tanaostigmodes madrensis)

Belaira mucronata (*Cubaniella trotteri*)

Canavalia ensiformis (*Tanaostigma gahani*)

Cratylia moelis (*Tanaostigma gahani*)

Galactia striata (*Tanaostigma slossonae*)

Galactia volubilis (*Tanaostigma slossonae*)

Lonchocarpus latifolia (*Tanaostigma coursetiae*)

Machaerium aculeatum (*Tanaostigmodes fernandesi*)

Machaerium robinifolium (*Tanaostigma bennetti*)

Machaerium (*Tanaostigma chapadae*)

Willardia mexicana (*Tanaostigma coursetiae*)

FABACEAE:Mimosoidea

Acacia constricta (*Tanaostigma stanleyi*, *Tanaostigmodes larsoni*,
Tanaostigmodes mosesi, *Tanaostigmodes sonorensis*)

Acacia greggii (*Tanaostigmodes howardii*, *Tanaostigmodes tescus*,
Tanaostigmodes tychii)

Acacia (*Tanaostigmodes peruviansis*)

Calliandra bicolor (*Tanaostigmodes ringueleti*)

Calliandra californica (*Tanaostigmodes fisheri*)

Calliandra selloi (*Tanaostigmodes ringueleti*)

Calliandra (*Tanaoneura aurifer*)

Inga laurina (*Tanaoneura portoricensis*)

Inga (*Tanaoneura hirticoxa*, *Tanaoneura maculiventris*, *Tanaoneura*
portoricensis, *Tanaoneura smicropleura*, *Tanaostigma gahani*)

Mimosa biuncifera (*Tanaostigmodes albiclavus*)

Mimosa dysocarpa (*Tanaostigmodes yuohuae*)

Mimosa guatamalensis (*Tanaostigmodes mexicanus*)

Pithecellobium flexicaule (*Tanaostigmodes meltoni*, *Tanaostigmodes*
minutus, *Tanaostigmodes xanthogaster*)

- Pithecellobium guadalupense* (*Tanaostigmodes pithecellobiae*)
Pithecellobium unguis-cati (*Tanaostigmodes pithecellobiae*)
Prosopis alba (*Tanaostigmodes coeruleus*)
Prosopis alpataco (*Dendrosema albitarse*, *Tanaostigmodes coeruleus*)
Prosopis chilensis (*Tanaostigmodes coeruleus*)
Prosopis nigra (*Tanaostigmodes coeruleus*)
Prosopis strombulifera (*Tanaostigma albosquamatum*, *Tanaostigmodes viridis*)

LECYTHIDACEAE

- Eschweilera matamata* (*Tanaoneura matamata*)

MALVACEAE

- [?] *Hibiscus* (*Tanaostigmodes tetartus*)
[?] *Malachra capitata* (*Tanaostigmodes emarginatus*)

MYRTACEAE

- Psidium* (*Tanaoneura smicropleura*)

POLYGONACEAE

- Triplaris cumingiana* (*Tanaostigmodes basilaris*)
Triplaris (*Tanaostigmodes basilaris*, *Tanaostigmodes triplaris*)

RHAMNACEAE

- Condalia lineata* (*Liebeliella pleuralis*)
Scutia buccifolia (*Minapis nigra*)

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